FCC TEST REPORT

Prepared For :	Hopeful Electric CO., LTD
Product Name:	MID
Model :	MID940S-RK68D, MID940H-RK68D, MID940S, MID940H, PMID920, PMID918KIT
Prepared By :	Shenzhen BATT Testing Technology Co., Ltd. 11F, Bldg.B, Xinbaoyuan, Xinanhu Commercial city, Bao'an District, Shenzhen, Guangdong, China. Tel: 86-755-27753991 Fax: 86-755-27754182
Test Date:	August 14 to August 20, 2013
Date of Report :	August 21 , 2013
Report No.:	BATT201308155FCC

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1 TEST CERTIFICATION

Product:	MID
Model:	MID940S-RK68D, MID940H-RK68D, MID940S, MID940H, PMID920, PMID918KIT
Applicant:	Hopeful Electric CO., LTD 22 Floor, Changhong Building, Hi-Tech Park, Nanshan District, Shenzhen City, P.R.China
Factory:	Hopeful Elecrtic CO., LTD / SHUNDE ASSOCIATE ELECTRONIC CO., LTD. 148, Ronggui Road (Mid), Ronggui Town, Shunde District, Foshan City, Guangdong Prov., China / No.4 GuiXin East Road RongGui Town Area Fushan City Guangdong Province China
Trade Mark:	N/A
Tested:	August 14, 2013 to August 20, 2013
Test Voltage:	
Operational Frequency Range:	EEE 802.11b/g, 802.11n HT20: 2412-2462MHz IEEE 802.11n HT40 : 2422MHz-2452MHz
Modulation Type:	IEEE 802.11b : DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g : OFDM (64QAM, 16AQM, QPSK, BPSK) IEEE 802.11n HT20/40 : OFDM (64QAM, 16QAM, QPSK, BPSK)
Channel Spacing	IEEE 802.11b/g/n: 5MHz
Air Data Rate	IEEE 802.11b : 11, 5.5, 2, 1 Mbps IEEE 802.11g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20 : 150, 117 ,104, 78, 65, 58.5, 52, 39, 26, 19.5, 13, 6 Mbps IEEE 802.11n HT40 : 150, 117 ,104, 78, 65, 58.5, 52, 39, 26, 19.5, 13, 6 Mbps
Frequency Selection	By software
Channel Number	IEEE 802.11b/g ,802.11n HT20 : 11 Channels IEEE 802.11n HT40 : 7 Channels
Antenna:	Integral antenna with Gain 2.0 dBi
Power Supply:	Model No.: HP0520D1-NA Input: 100-240V, 0.3A, 50/60Hz; Output: 5V, 2A Max
FCC ID:	2AAQZMID940S-RK68D
Applicable Standards:	FCC Part 15.247

The test report was prepared by Shenzhen BATT Testing Technology Co., Ltd.and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Prepared by : Hellen xiao

Hellen XiaoAssistant

Reviewer : Mike Yong

Mike Yong/Supervisor

Approved & Authorized Signer : Jones Song

Jones Song/ Manager

2.0 Test Equipments

Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2013-05-27	2014-05-26
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	2013-05-27	2014-05-26
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2013-05-27	2014-05-26
Loop Antenna	EMCO	6502	00042960	2013-05-27	2014-05-26
Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2013-05-27	2014-05-26
3m OATS	--	--	N/A	2013-05-27	2014-05-26
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170399	2013-05-27	2014-05-26
Horn Antenna	SCHWARZBECK	BBHA 9120	D143	2013-05-27	2014-05-26
Power meter	Anritsu	ML2487A	6K00003613	2013-05-27	2014-05-26
Power sensor	Anritsu	MA2491A	32263	2013-05-27	2014-05-26
Bilog Antenna	Schwarebeck	VULB9163	9163/142	2013-05-27	2014-05-26
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2013-05-27	2014-05-26
9*6*6 Anechoic	--	--	N/A	2013-05-27	2014-05-26
EMI Test Receiver	RS	ESCS30	100139	2013-05-27	2014-05-26
LISN	RS	ESH2-Z5	100225	2013-05-27	2014-05-26
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2013-05-27	2014-05-26
Pre-Amplifier	A.H.	PAM-0126	1415261	2013-05-27	2014-05-26

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107 & 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.109,15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies

4.0 Test LAB Details

All Tests Performed at

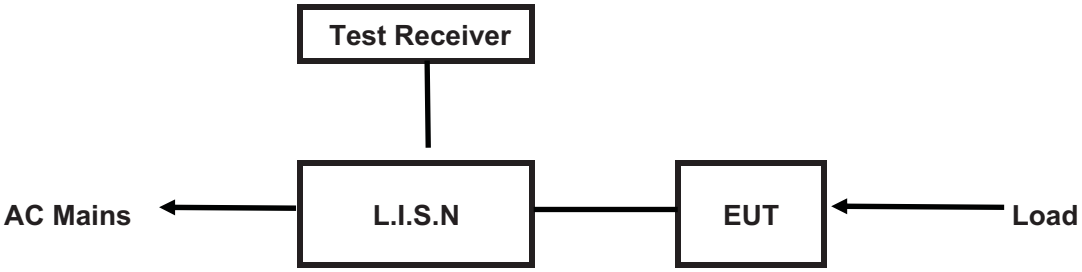
Name: Shenzhen Emtek Co., Ltd.

Address: Bldg. 69, Majialong Industry Zone,,Nanshan District,Shenzhen, Guangdong, 518052China

FCC Registration Number: 406365

5. Power Line Conducted Emission Test

5.1 Schematics of the test

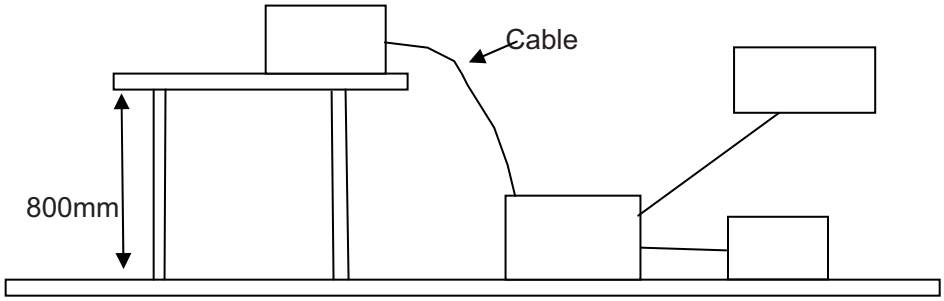


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

79 channels are provided to the EUT

A. EUT

Device	Manufacturer	Model	FCC ID
MID	Hopeful Elecrtic CO., LTD / SHUNDE ASSOCIATE ELECTRONIC CO., LTD.	MID940S-RK68D, MID940H-RK68D, MID940S, MID940H, PMID920, PMID918KIT	2AAQZMID940S-RK68D

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
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5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.107, 15.207

Frequency (MHz)	Class A Limits (dBμV)		Class B Limits (dBμV)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ～ 0.50	79.0	66.0	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	73.0	60.0	56.0	46.0
5.00 ～ 30.00	73.0	60.0	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

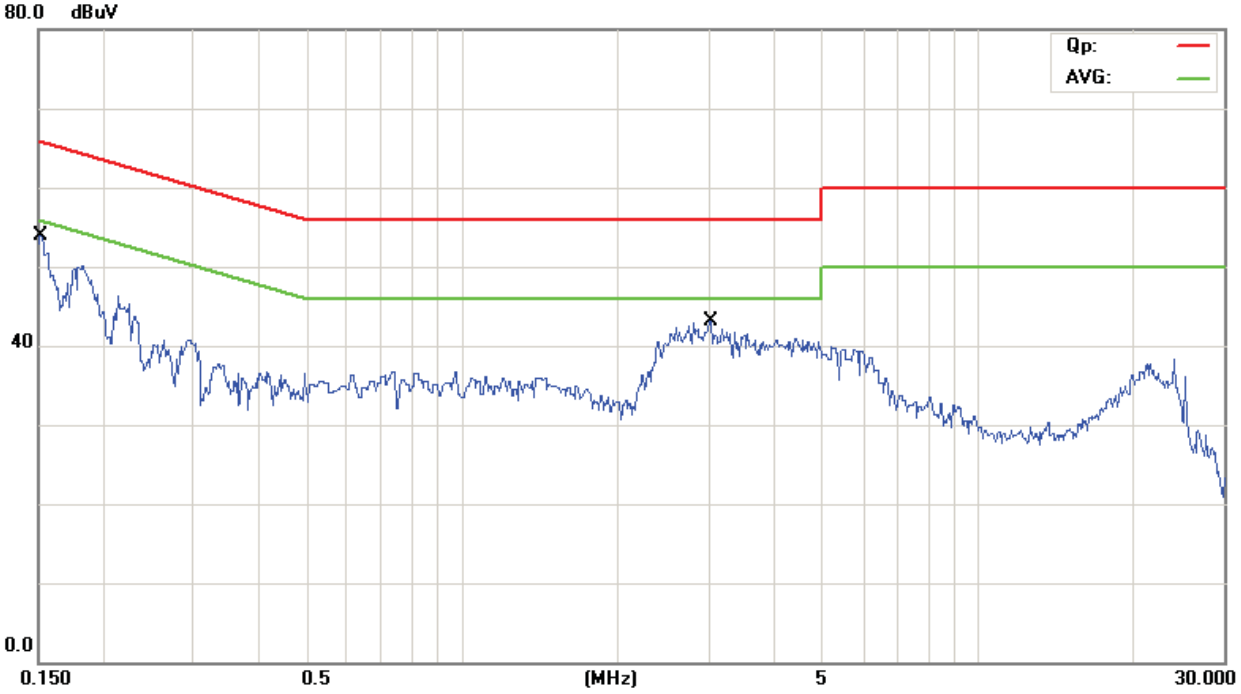
Temperature: 25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Line	Reading(dBμV)		Limit(dBμV)	
		Quasi-peak	Average	Quasi-peak	Average
0.150	Live	51.10	29.30	65.96	55.96
3.017	Live	36.81	28.61	56.00	46.00

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

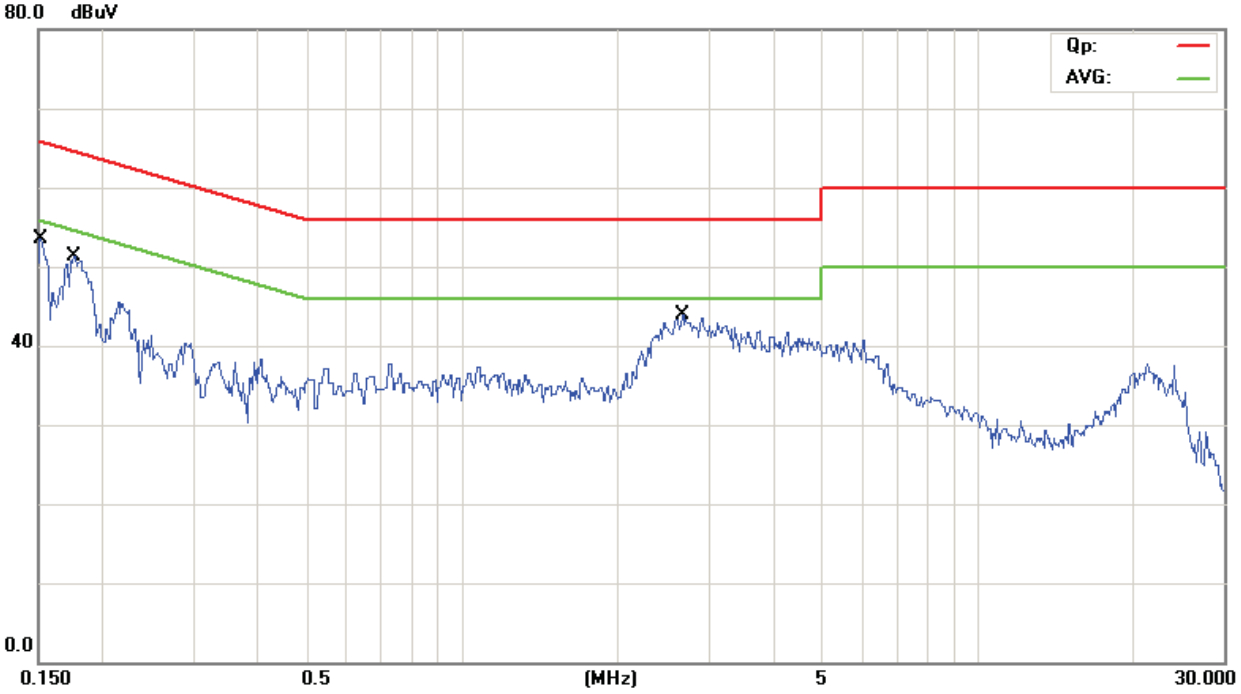
Temperature: 25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Line	Reading(dBμV)		Limit(dBμV)	
		Quasi-peak	Average	Quasi-peak	Average
0.150	Neutral	49.90	25.40	65.96	55.96
0.176	Neutral	48.63	33.73	64.67	54.67
2.656	Neutral	37.86	30.56	56.00	46.00

6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Shenzhen Emtek Co., Ltd.. This site is on file with the FCC laboratory division, Registration No.406365

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.

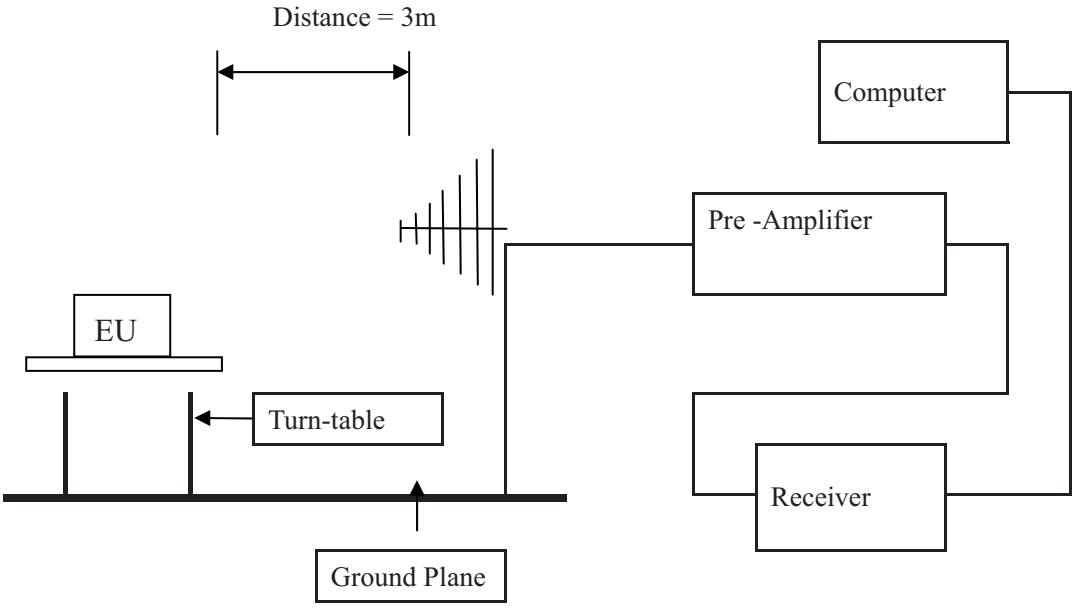
(3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.

(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

(6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109

Frequency Range (MHz)	Distance (m)	Field strength (dBμV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the higher limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

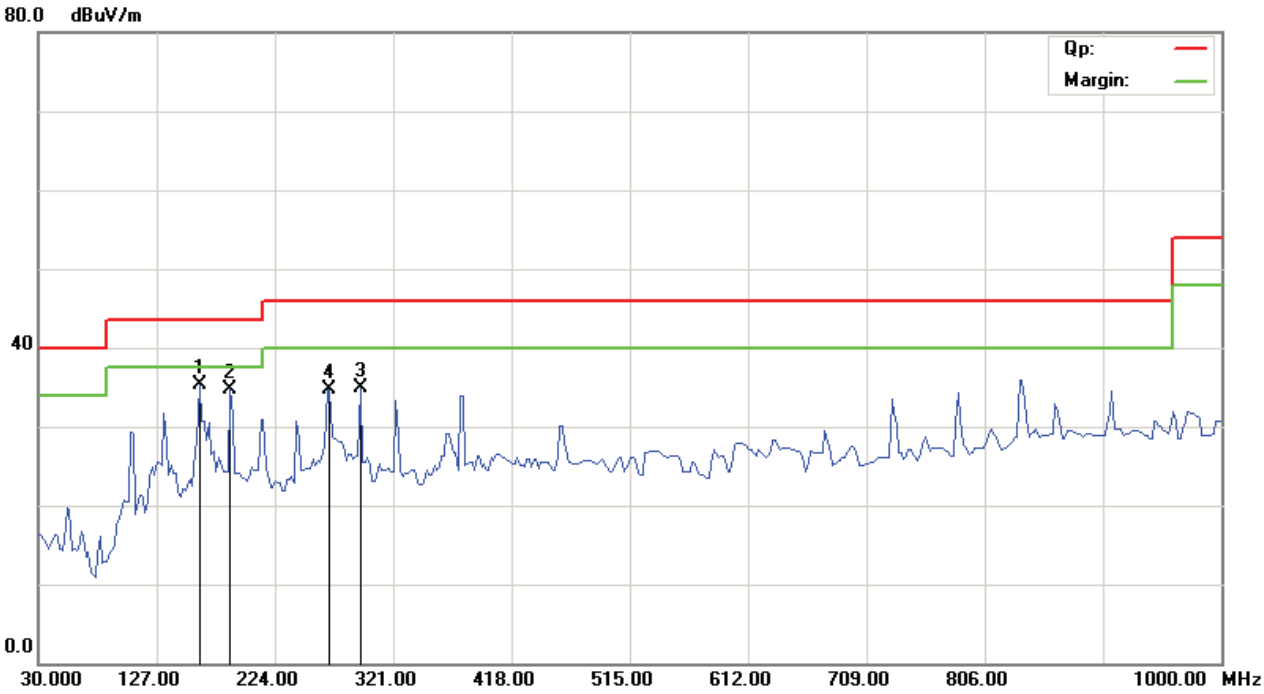
EUT set Condition: Keep Transmitting

Results: **Pass**

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
162.184	35.29	H	43.50
187.455	34.80	H	43.50
296.312	34.95	H	46.00
269.098	34.67	H	46.00
134.969	34.69	V	43.50
187.455	36.56	V	43.50
214.669	35.72	V	43.50
269.098	35.14	V	46.00
241.883	35.47	V	46.00

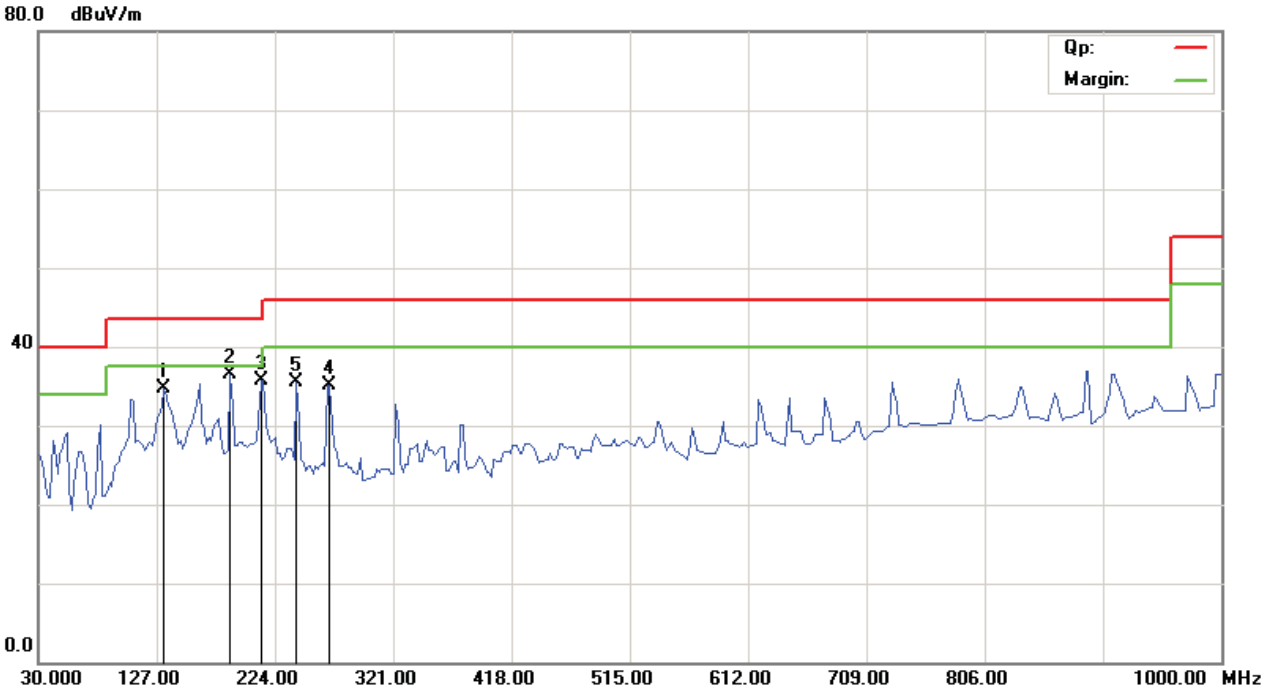
Test Figure:

H



Test Figure:

V



Operation Mode: Transmitting under CH01 for 11b at 11Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2412.00	93.26（PK）	H	Fundamental Frequency
2412.00	93.76（PK）	V	
4824.00	47.82（PK）	H	74(Peak)/ 54(AV)
4824.00	49.09（PK）	V	
7236.00	--	H/V	74(Peak)/ 54(AV)
9648.00	--	H/V	74(Peak)/ 54(AV)
12060	--	H/V	74(Peak)/ 54(AV)
14472	--	H/V	74(Peak)/ 54(AV)
16884	--	H/V	74(Peak)/ 54(AV)
19296	--	H/V	74(Peak)/ 54(AV)
21708	--	H/V	74(Peak)/ 54(AV)
24120	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11b mode at 11Mbps is the worse case

Operation Mode: Transmitting under CH06 for 11b at 11Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2437.00	92.22（PK）	H	Fundamental Frequency
2437.00	92.65（PK）	V	
4874.00	48.18（PK）	H	74(Peak)/ 54(AV)
4874.00	47.53（PK）	V	
7311.00	--	H/V	74(Peak)/ 54(AV)
9748.00	--	H/V	74(Peak)/ 54(AV)
12185	--	H/V	74(Peak)/ 54(AV)
14622	--	H/V	74(Peak)/ 54(AV)
17059	--	H/V	74(Peak)/ 54(AV)
19496	--	H/V	74(Peak)/ 54(AV)
21933	--	H/V	74(Peak)/ 54(AV)
24370	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11b mode at 11Mbps is the worse case

Operation Mode: Transmitting under CH11 for 11b at 11Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2462.00	94.24（PK）	H	Fundamental Frequency
2462.00	94.45（PK）	V	
4924	46.79（PK）	H	74(Peak)/ 54(AV)
4924	48.63（PK）	V	
7386	--	H/V	74(Peak)/ 54(AV)
9848	--	H/V	74(Peak)/ 54(AV)
12310	--	H/V	74(Peak)/ 54(AV)
14772	--	H/V	74(Peak)/ 54(AV)
17234	--	H/V	74(Peak)/ 54(AV)
19696	--	H/V	74(Peak)/ 54(AV)
22158	--	H/V	74(Peak)/ 54(AV)
24620	--	H/V	74(Peak)/ 54(AV)

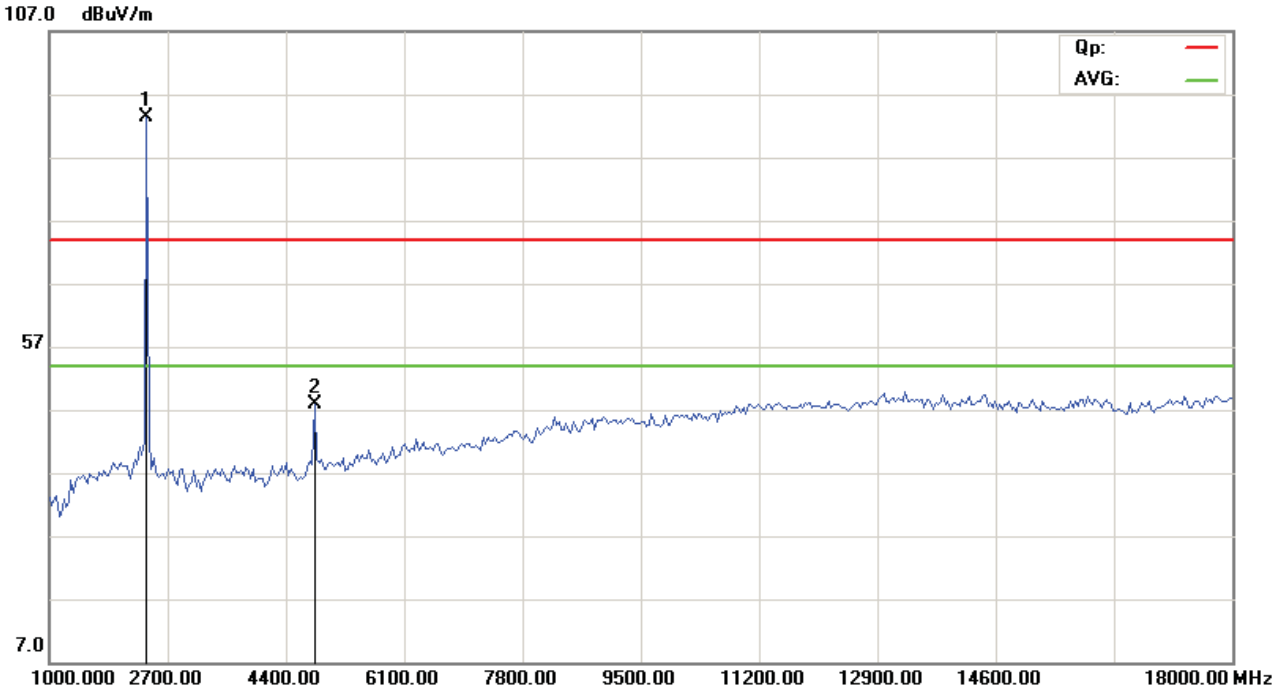
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

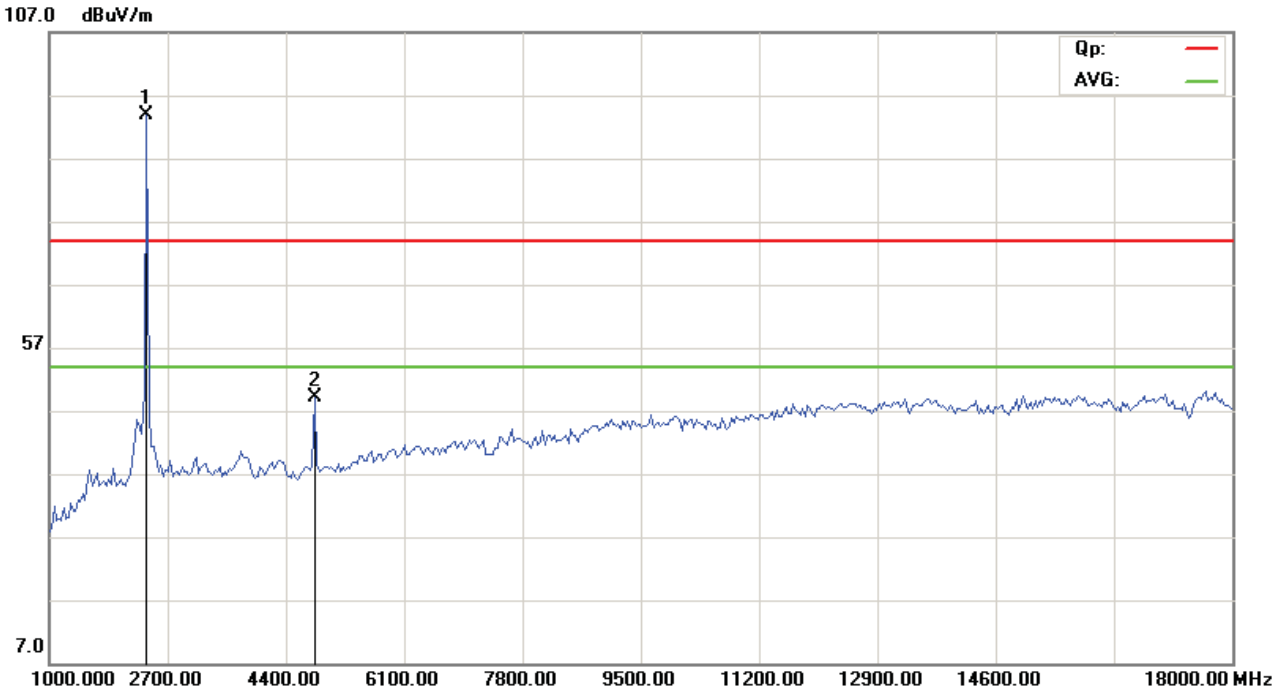
3. For 802.11b mode at 11Mbps is the worse case

Please refer to the following test plots for details:

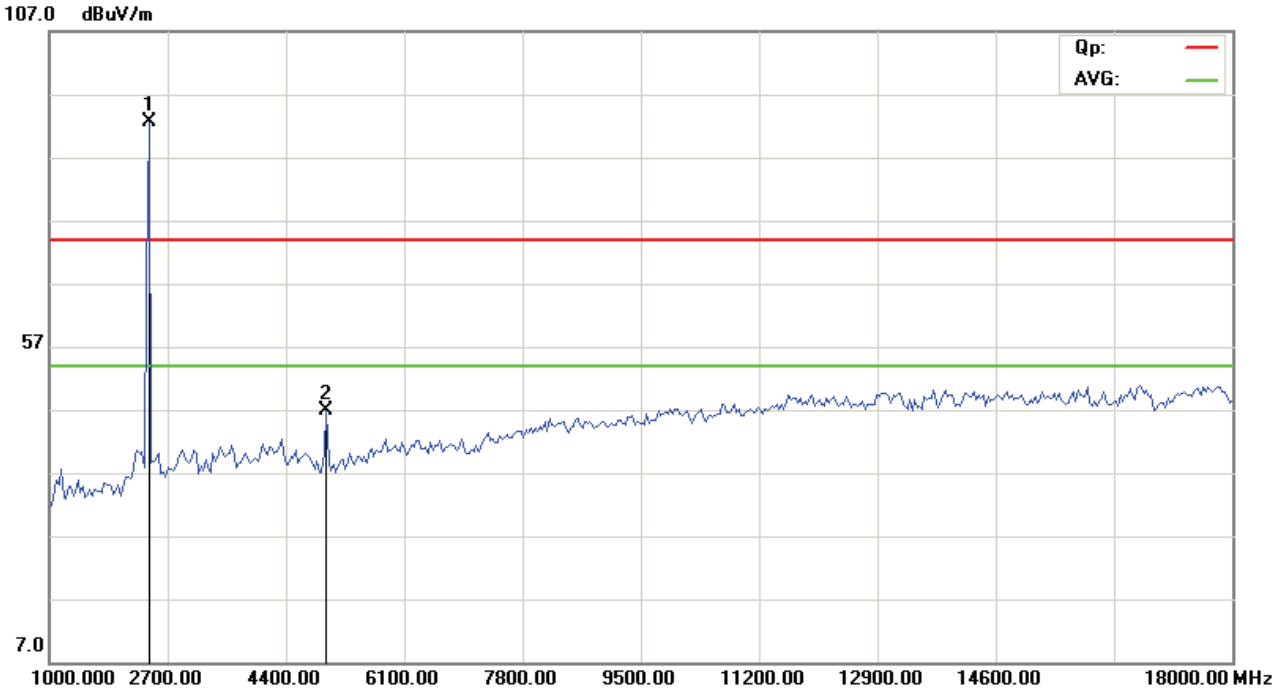
CH01 at 11Mbps: Horizontal



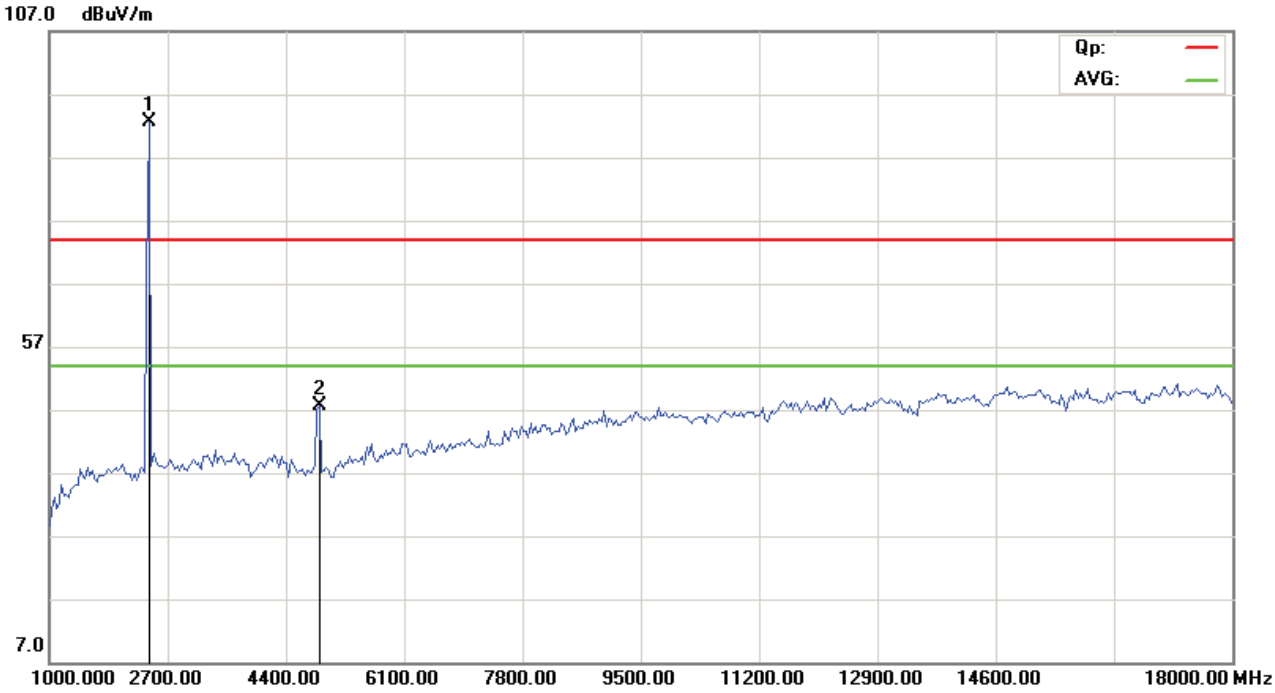
CH01 at 11Mbps: Vertical



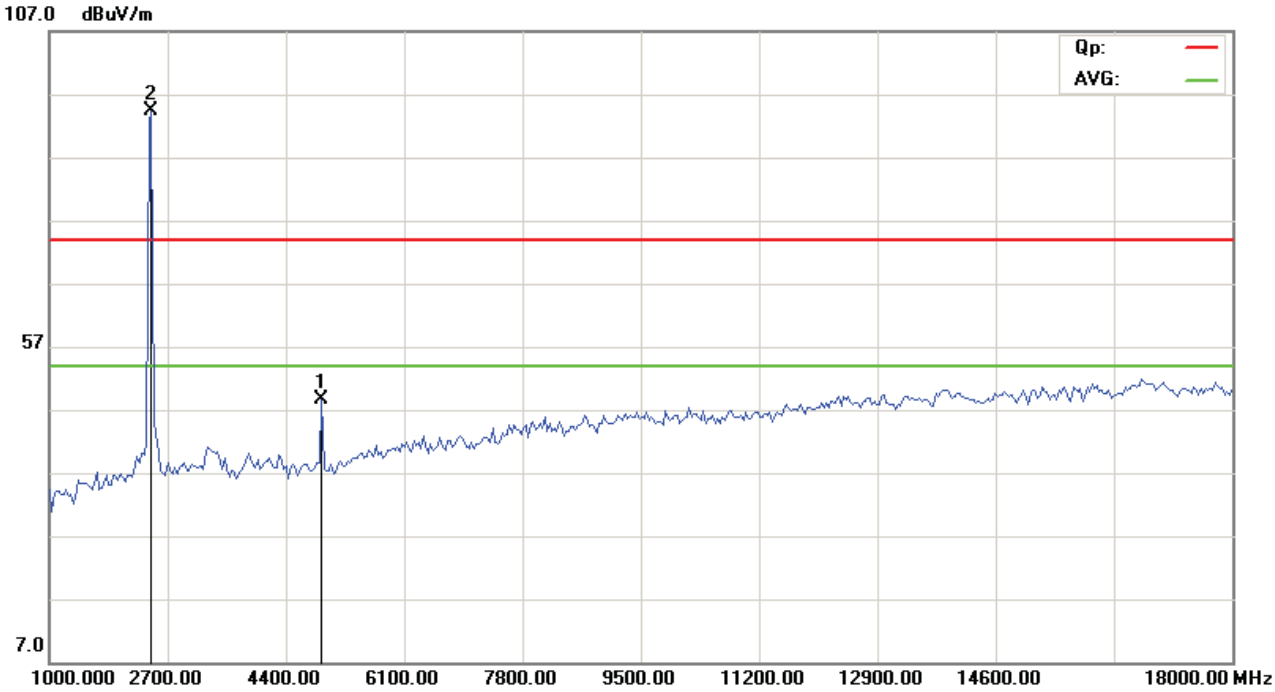
CH06 at 11Mbps: Vertical



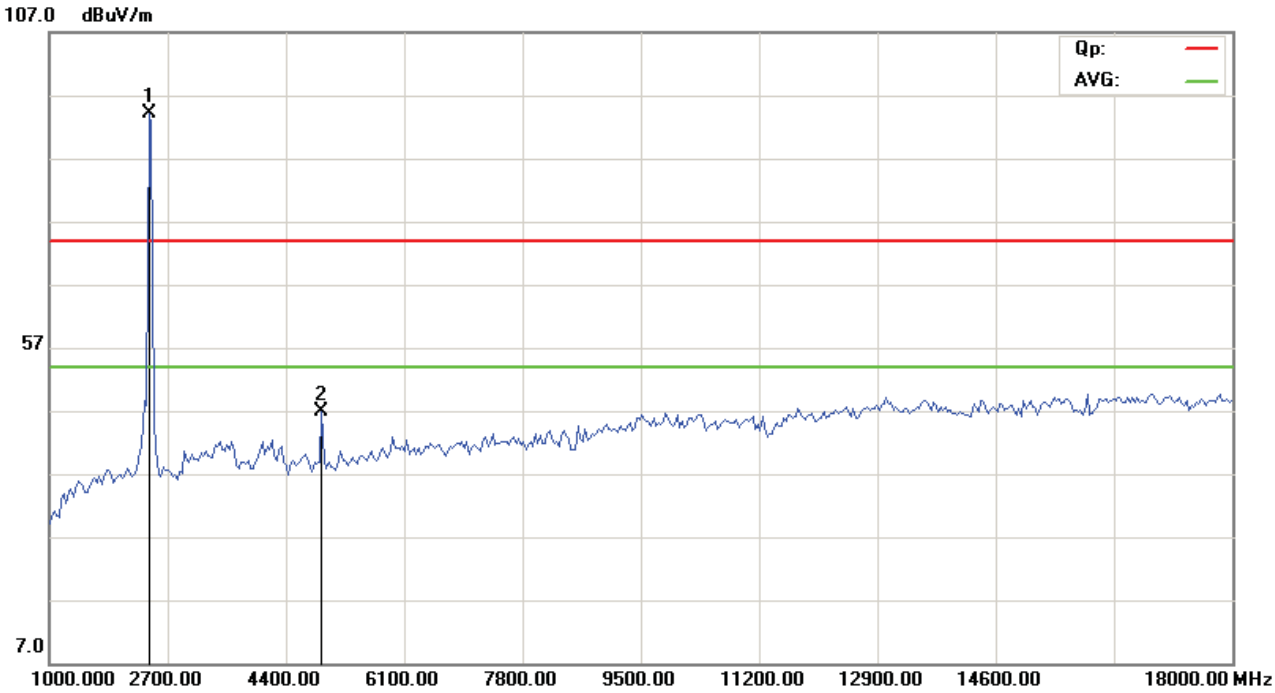
CH06 at 11Mbps: Horizontal



CH11 at 11Mbps: Vertical



CH11at 11Mbps: Horizontal



Note: For radiated Emissions from 18-25GHz, it is only the floor noise.

Operation Mode: Transmitting under CH01 for 11g at 54 Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2412.00	93.89（PK）	H	Fundamental Frequency
2412.00	93.69（PK）	V	
4824.00	47.78（PK）	H	74(Peak)/ 54(AV)
4824.00	46.82（PK）	V	
7236.00	--	H/V	74(Peak)/ 54(AV)
9648.00	--	H/V	74(Peak)/ 54(AV)
12060	--	H/V	74(Peak)/ 54(AV)
14472	--	H/V	74(Peak)/ 54(AV)
16684	--	H/V	74(Peak)/ 54(AV)
19296	--	H/V	74(Peak)/ 54(AV)
21708	--	H/V	74(Peak)/ 54(AV)
24120	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11g mode 54Mbps is the worse case

Operation Mode: Transmitting under CH06 for 11g at 54 Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2437.00	93.97（PK）	H	Fundamental Frequency
2437.00	93.44（PK）	V	
4874.00	45.47（PK）	H	74(Peak)/ 54(AV)
4874.00	48.32（PK）	V	
7311.00	--	H/V	74(Peak)/ 54(AV)
9748.00	--	H/V	74(Peak)/ 54(AV)
12185	--	H/V	74(Peak)/ 54(AV)
14622	--	H/V	74(Peak)/ 54(AV)
17059	--	H/V	74(Peak)/ 54(AV)
19496	--	H/V	74(Peak)/ 54(AV)
21933	--	H/V	74(Peak)/ 54(AV)
24370	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11g mode 54Mbps is the worse case

Operation Mode: Transmitting under CH11 for 11g at 54 Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2462.00	92.93（PK）	H	Fundamental Frequency
2462.00	92.25（PK）	V	
4924	48.08（PK）	H	74(Peak)/ 54(AV)
4924	47.64（PK）	V	
7386	--	H/V	74(Peak)/ 54(AV)
9848	--	H/V	74(Peak)/ 54(AV)
12310	--	H/V	74(Peak)/ 54(AV)
14772	--	H/V	74(Peak)/ 54(AV)
17234	--	H/V	74(Peak)/ 54(AV)
19696	--	H/V	74(Peak)/ 54(AV)
22158	--	H/V	74(Peak)/ 54(AV)
24620	--	H/V	74(Peak)/ 54(AV)

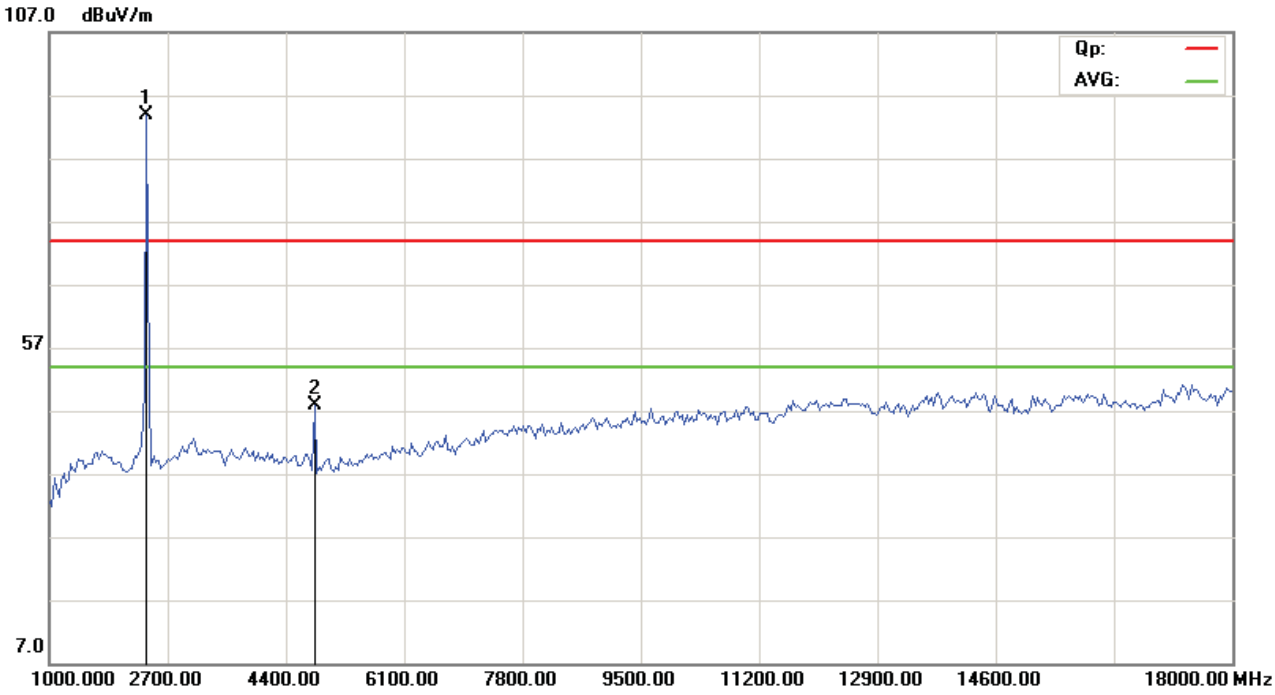
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

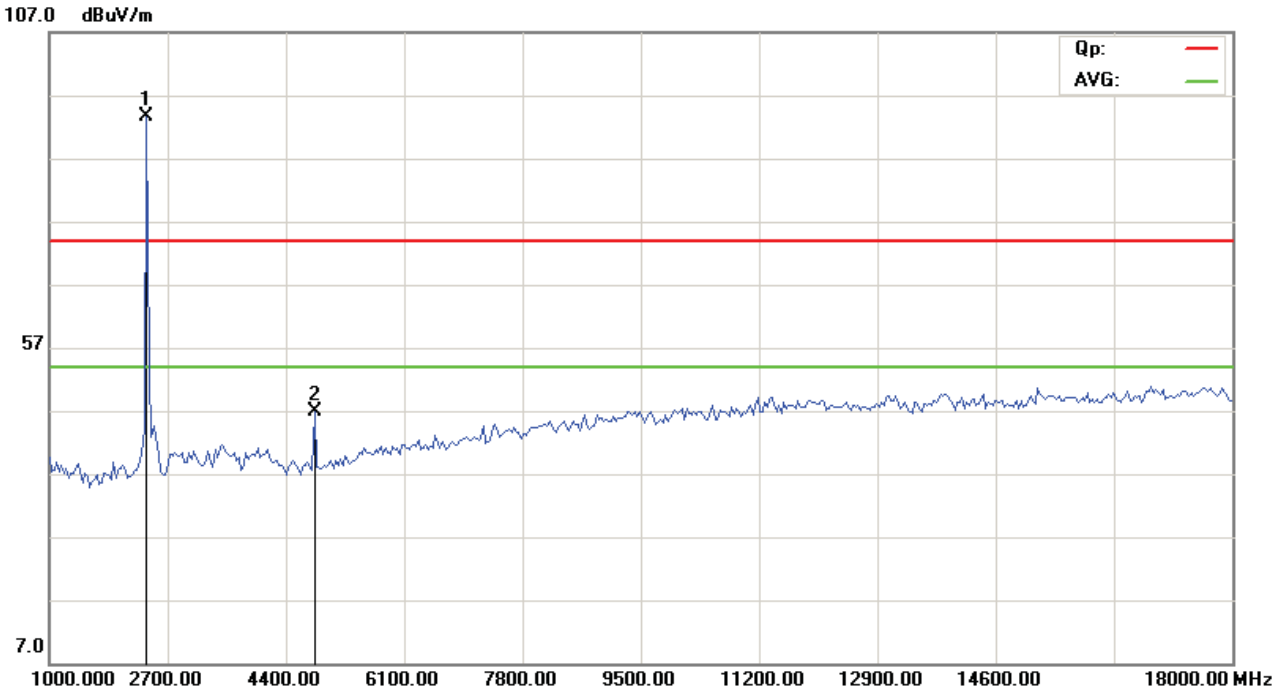
3. For 802.11g mode 54Mbps is the worse case

Please refer to the following test plots for details:

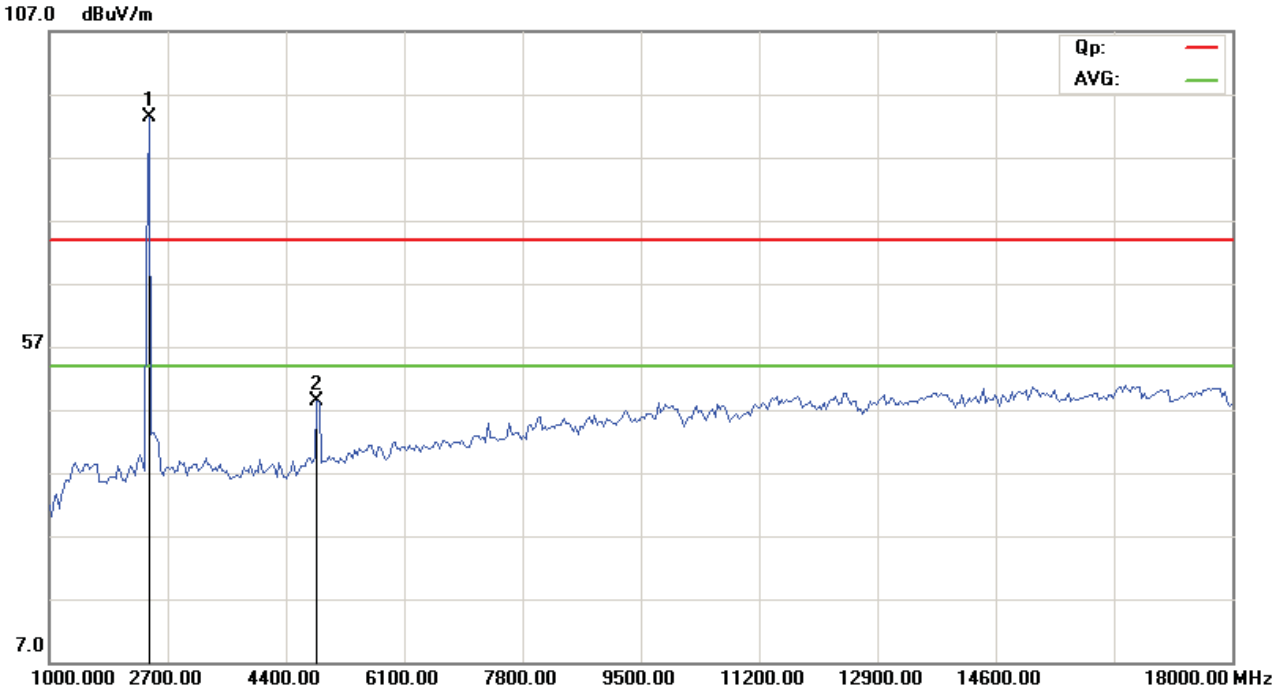
CH01 at 54Mbps: Horizontal



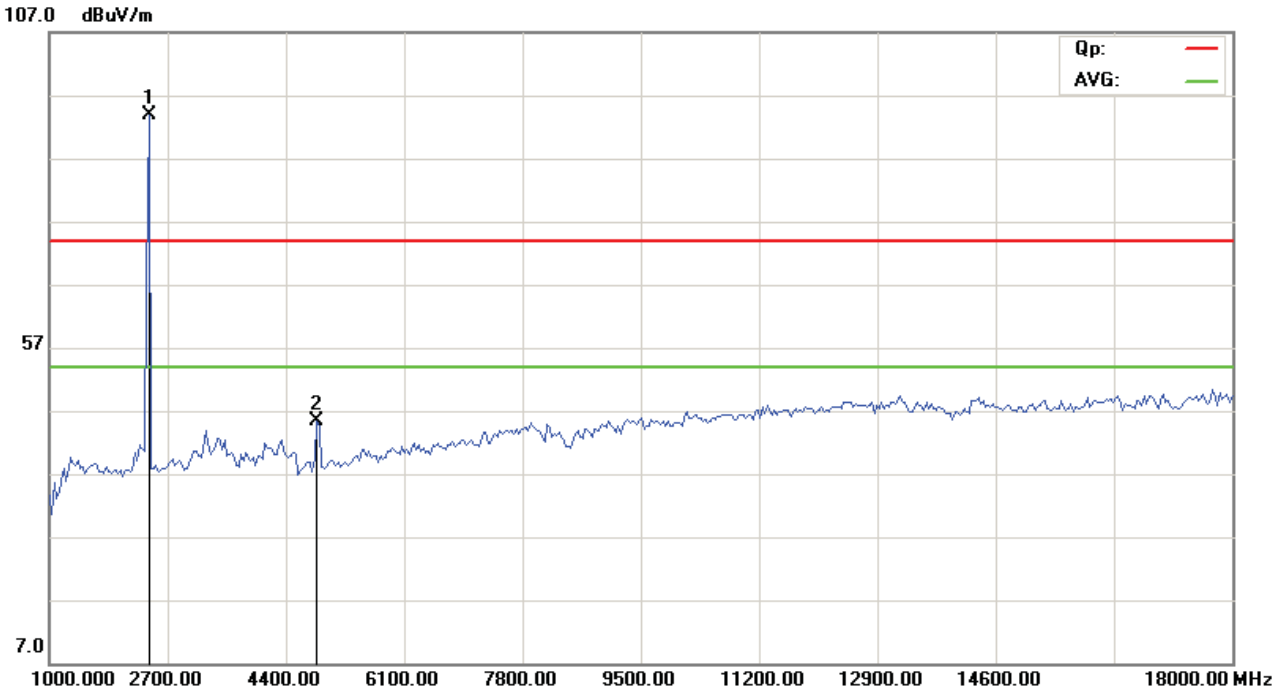
CH01 at 54Mbps: Vertical



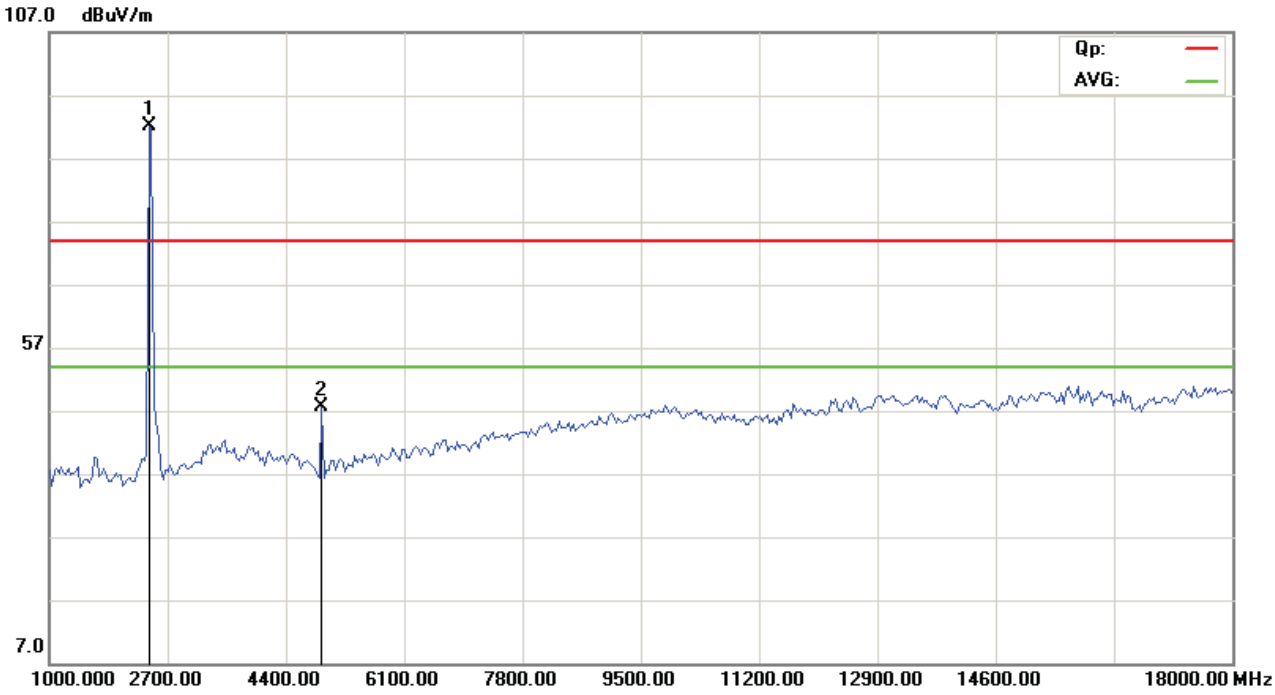
CH06 at 54Mbps: Vertical



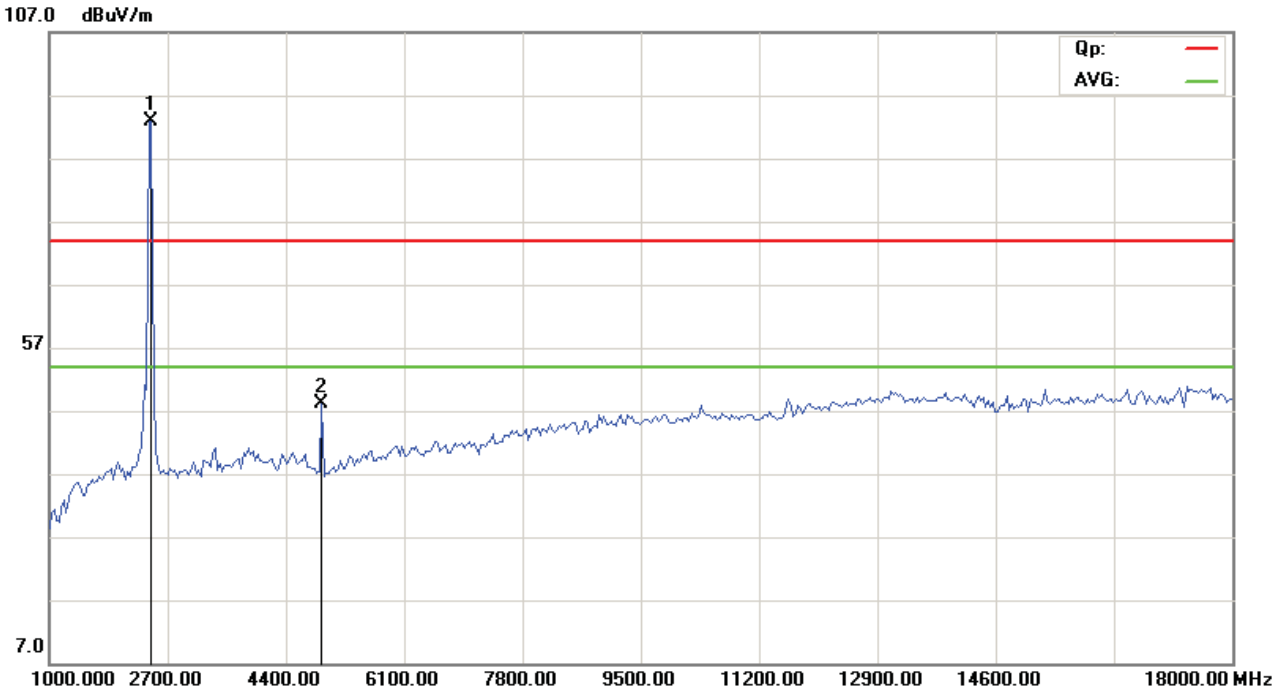
CH06 at 54Mbps: Horizontal



CH11 at 54Mbps: Vertical



CH11 at 54 Mbps: Horizontal



Note: For radiated Emissions from 18-25GHz, it is only the floor noise.

Operation Mode: Transmitting under CH01 for 11n HT20 at 65Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2412.00	92.36（PK）	H	Fundamental Frequency
2412.00	93.42（PK）	V	
4824.00	46.35（PK）	H	74(Peak)/ 54(AV)
4824.00	50.09（PK）	V	74(Peak)/ 54(AV)
7236.00	--	H/V	74(Peak)/ 54(AV)
9648.00	--	H/V	74(Peak)/ 54(AV)
12060	--	H/V	74(Peak)/ 54(AV)
14472	--	H/V	74(Peak)/ 54(AV)
16684	--	H/V	74(Peak)/ 54(AV)
19296	--	H/V	74(Peak)/ 54(AV)
21708	--	H/V	74(Peak)/ 54(AV)
24120	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11n HT20 at 65Mbps is the worse case

Operation Mode: Transmitting under CH06 for 11n HT20 at 65Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2437.00	92.55（PK）	H	Fundamental Frequency
2437.00	91.51（PK）	V	
4874.00	46.50（PK）	H	74(Peak)/ 54(AV)
4874.00	47.88（PK）	V	74(Peak)/ 54(AV)
7311.00	--	H/V	74(Peak)/ 54(AV)
9748.00	--	H/V	74(Peak)/ 54(AV)
12185	--	H/V	74(Peak)/ 54(AV)
14622	--	H/V	74(Peak)/ 54(AV)
17059	--	H/V	74(Peak)/ 54(AV)
19496	--	H/V	74(Peak)/ 54(AV)
21933	--	H/V	74(Peak)/ 54(AV)
24370	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802. 11n HT20 at 65bps is the worse case

Operation Mode: Transmitting under CH11 for 11n HT20 at 65Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2462.00	91.12（PK）	H	Fundamental Frequency
2462.00	91.31（PK）	V	
4924	47.19（PK）	H	74(Peak)/ 54(AV)
4924	48.14（PK）	V	74(Peak)/ 54(AV)
7386	--	H/V	74(Peak)/ 54(AV)
9848	--	H/V	74(Peak)/ 54(AV)
12310	--	H/V	74(Peak)/ 54(AV)
14772	--	H/V	74(Peak)/ 54(AV)
17234	--	H/V	74(Peak)/ 54(AV)
19696	--	H/V	74(Peak)/ 54(AV)
22158	--	H/V	74(Peak)/ 54(AV)
24620	--	H/V	74(Peak)/ 54(AV)

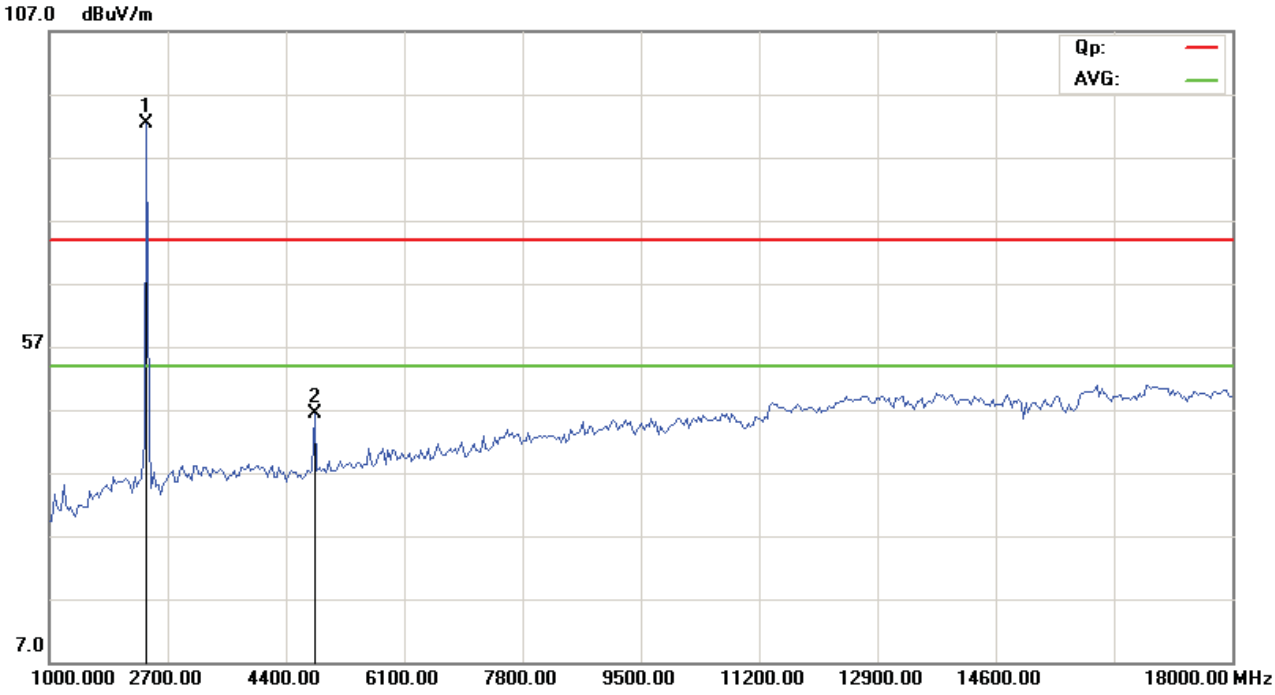
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

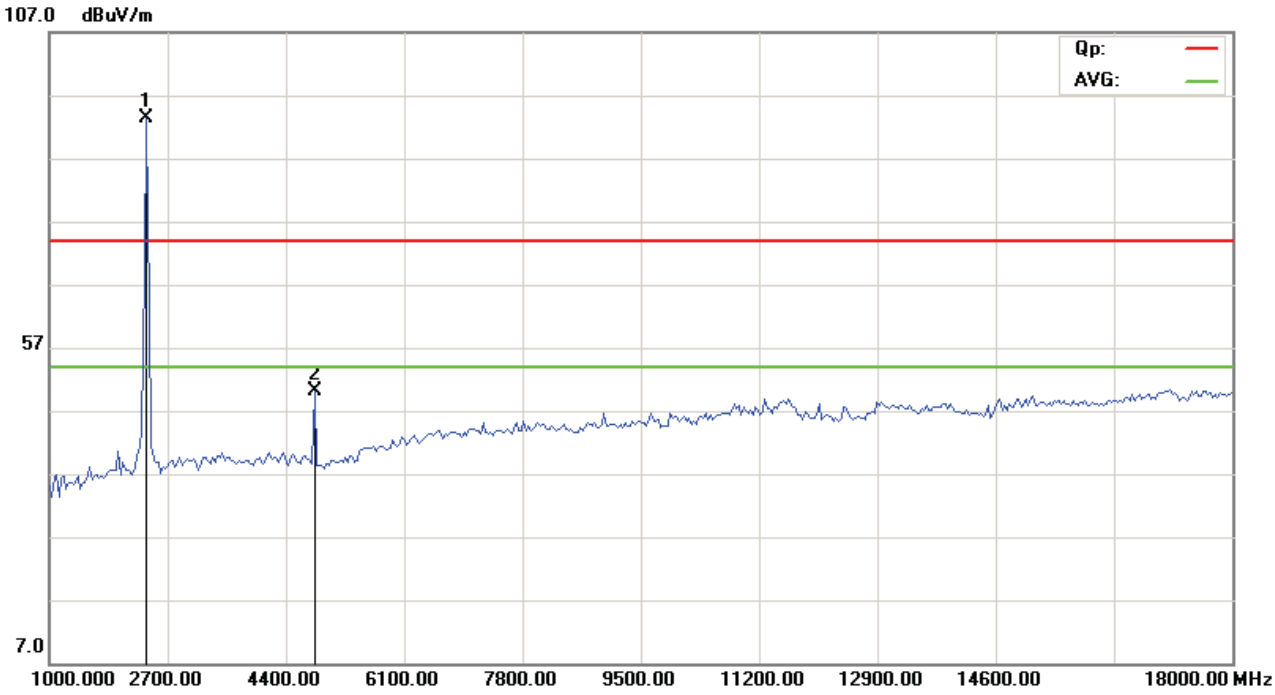
3. For 802. 11n HT20 at 65bps is the worse case

Please refer to the following test plots for details:

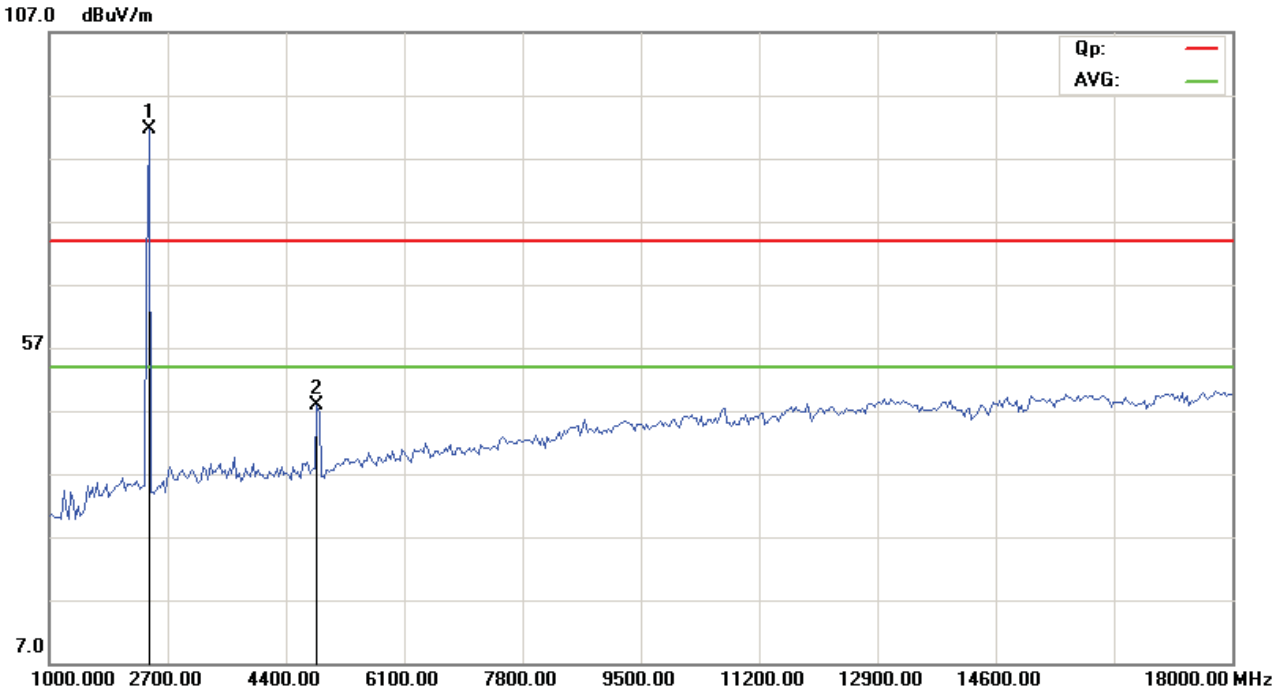
CH01 at 11n HT20: **Horizontal**



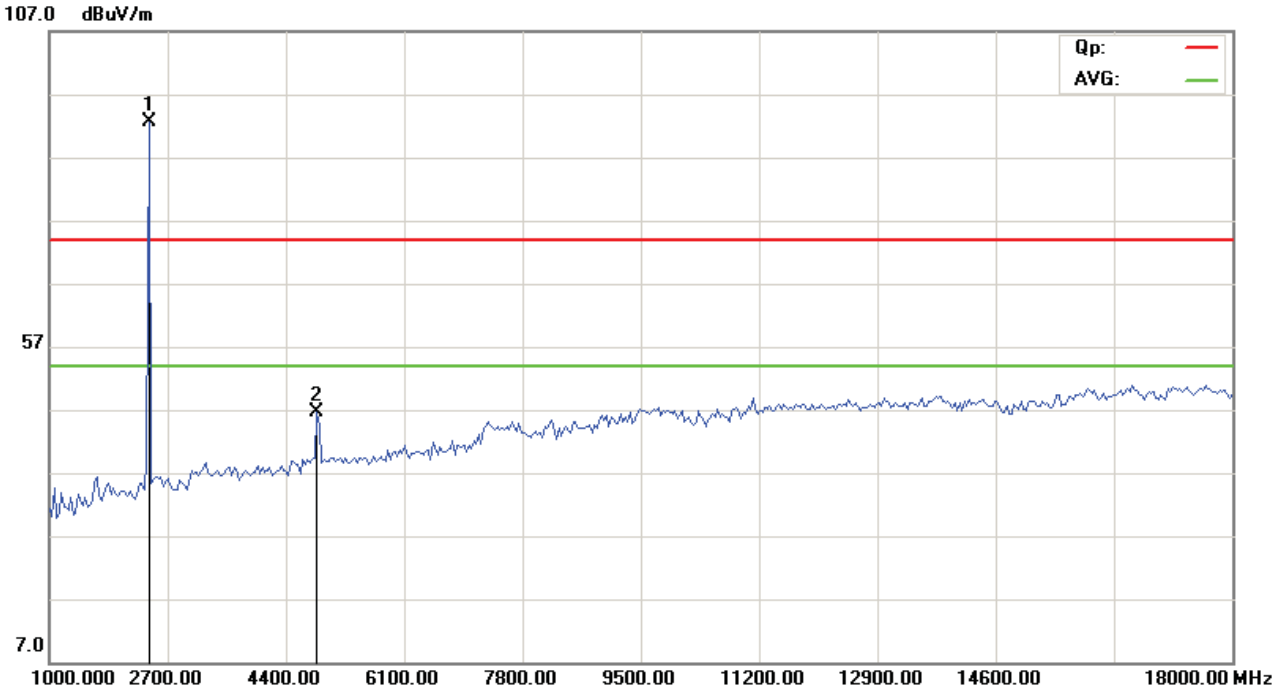
CH01 at 11n HT20: Vertical



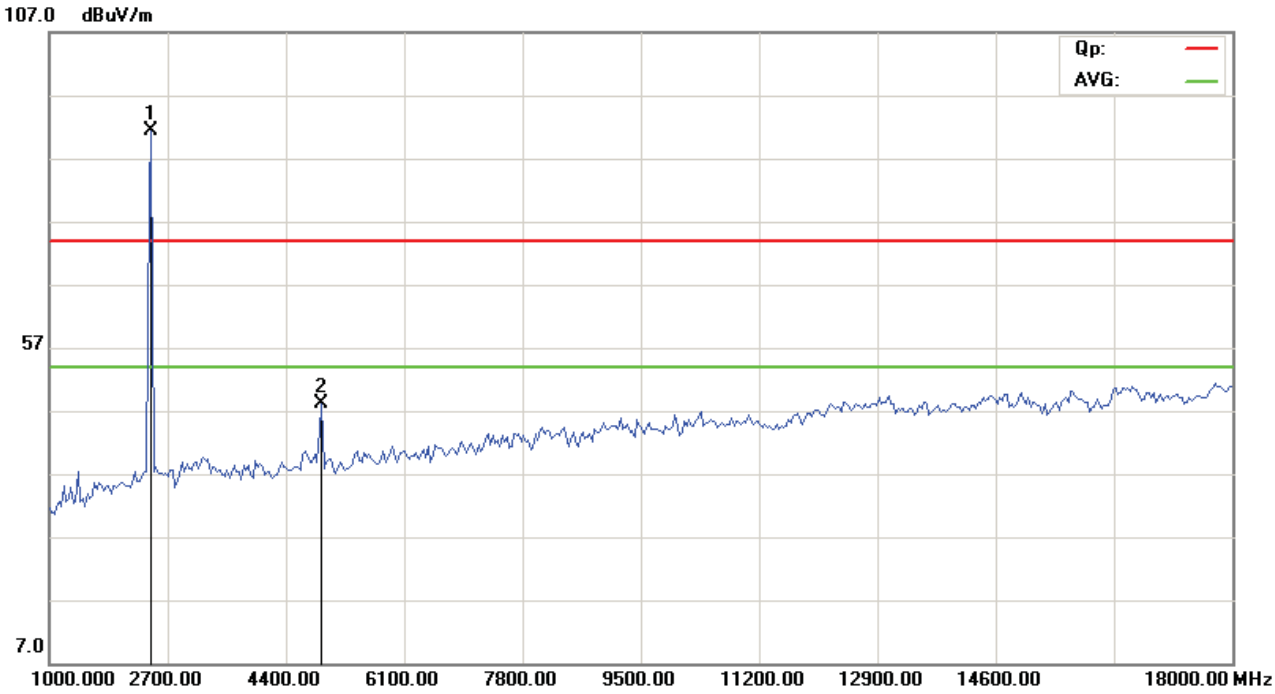
CH06 at 11n HT20: Vertical



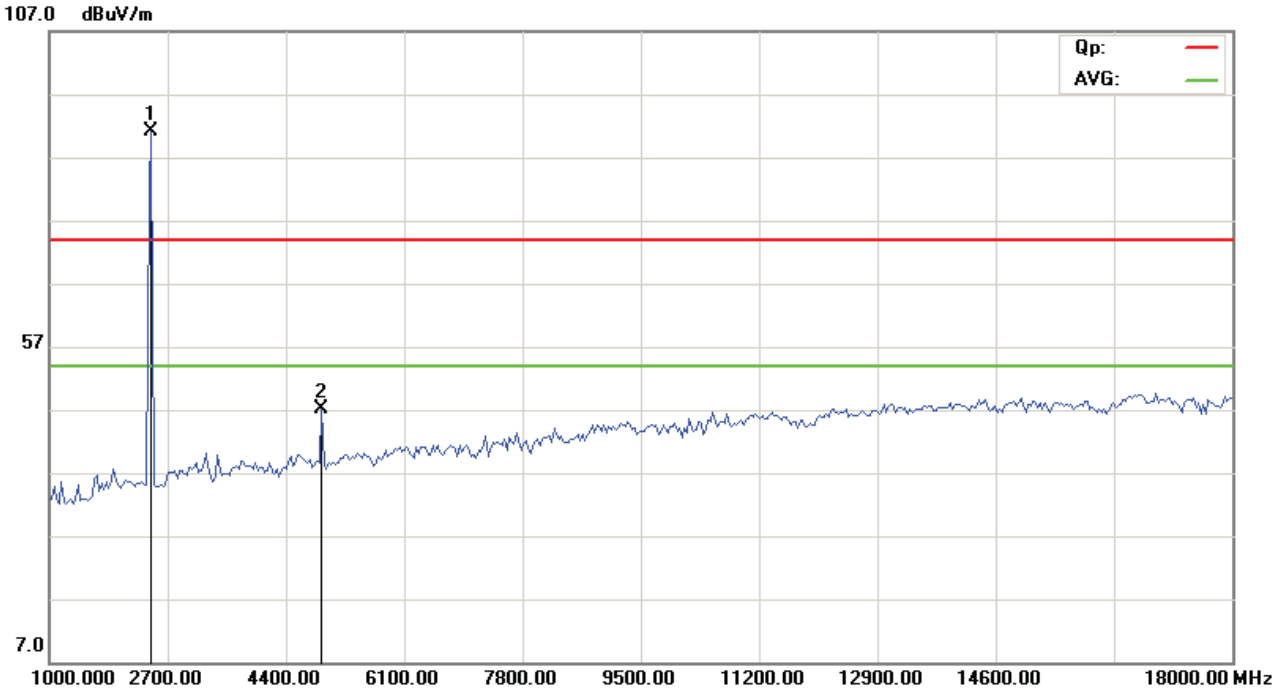
CH06 at 11n HT20: Horizontal



CH11 at 11n HT20: Vertical



CH11 at 11n HT20: Horizontal



Note: For radiated Emissions from 18-25GHz, it is only the floor noise.

Operation Mode: Transmitting under CH01 for 11n HT40 at 65Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2422.00	94.01（PK）	H	Fundamental Frequency
2422.00	94.46（PK）	V	
4844.00	46.51（PK）	H	74(Peak)/ 54(AV)
4844.00	46.27（PK）	V	
7266.00	--	H/V	74(Peak)/ 54(AV)
9688.00	--	H/V	74(Peak)/ 54(AV)
12110	--	H/V	74(Peak)/ 54(AV)
14532	--	H/V	74(Peak)/ 54(AV)
16954	--	H/V	74(Peak)/ 54(AV)
19376	--	H/V	74(Peak)/ 54(AV)
21798	--	H/V	74(Peak)/ 54(AV)
24220	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11n HT40 at 65bps is the worse case

Operation Mode: Transmitting under CH04 for 11n HT40 at 65Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2437.00	92.22（PK）	V	Fundamental Frequency
2437.00	92.65（PK）	H	
4874.00	48.18（PK）	V	74(Peak)/ 54(AV)
4874.00	47.53（PK）	H	
7311.00	--	H/V	74(Peak)/ 54(AV)
9748.00	--	H/V	74(Peak)/ 54(AV)
12185	--	H/V	74(Peak)/ 54(AV)
14622	--	H/V	74(Peak)/ 54(AV)
17059	--	H/V	74(Peak)/ 54(AV)
19496	--	H/V	74(Peak)/ 54(AV)
21933	--	H/V	74(Peak)/ 54(AV)
24370	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802. 11n HT40 at 65bps is the worse case

Operation Mode: Transmitting under CH07 for 11n HT40 at 65Mbps

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
2452.00	95.10（PK）	H	Fundamental Frequency
2452.00	98.06（PK）	V	
4904	48.73（PK）	H	74(Peak)/ 54(AV)
4904	45.08（PK）	V	
7356	--	H/V	74(Peak)/ 54(AV)
9808	--	H/V	74(Peak)/ 54(AV)
12260	--	H/V	74(Peak)/ 54(AV)
14712	--	H/V	74(Peak)/ 54(AV)
17164	--	H/V	74(Peak)/ 54(AV)
19616	--	H/V	74(Peak)/ 54(AV)
22068	--	H/V	74(Peak)/ 54(AV)
24520	--	H/V	74(Peak)/ 54(AV)

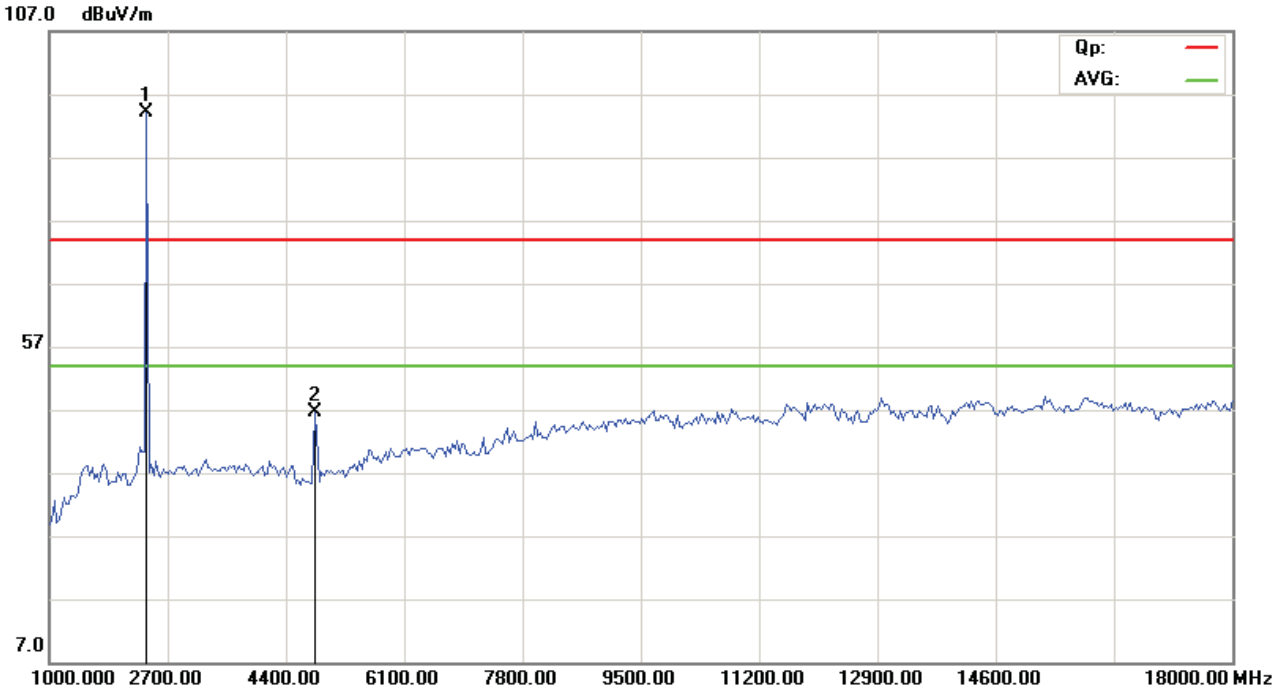
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

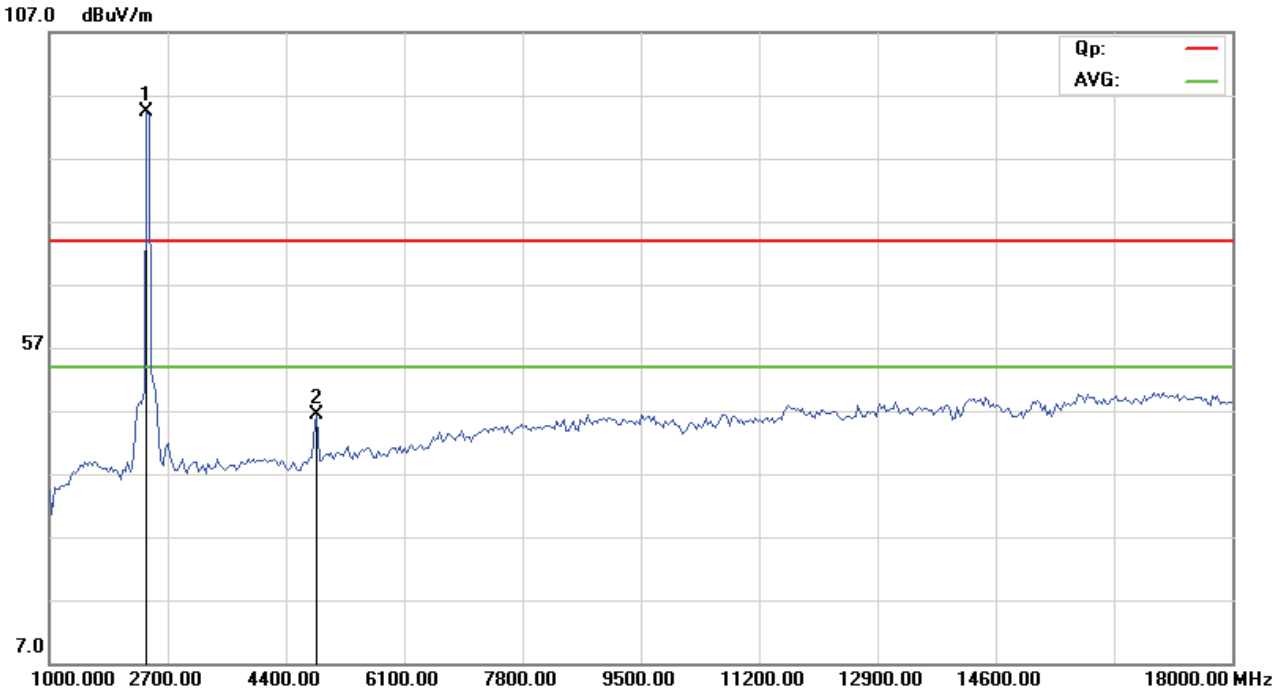
3. For 802. 11n HT40 at 65bps is the worse case

Please refer to the following test plots for details:

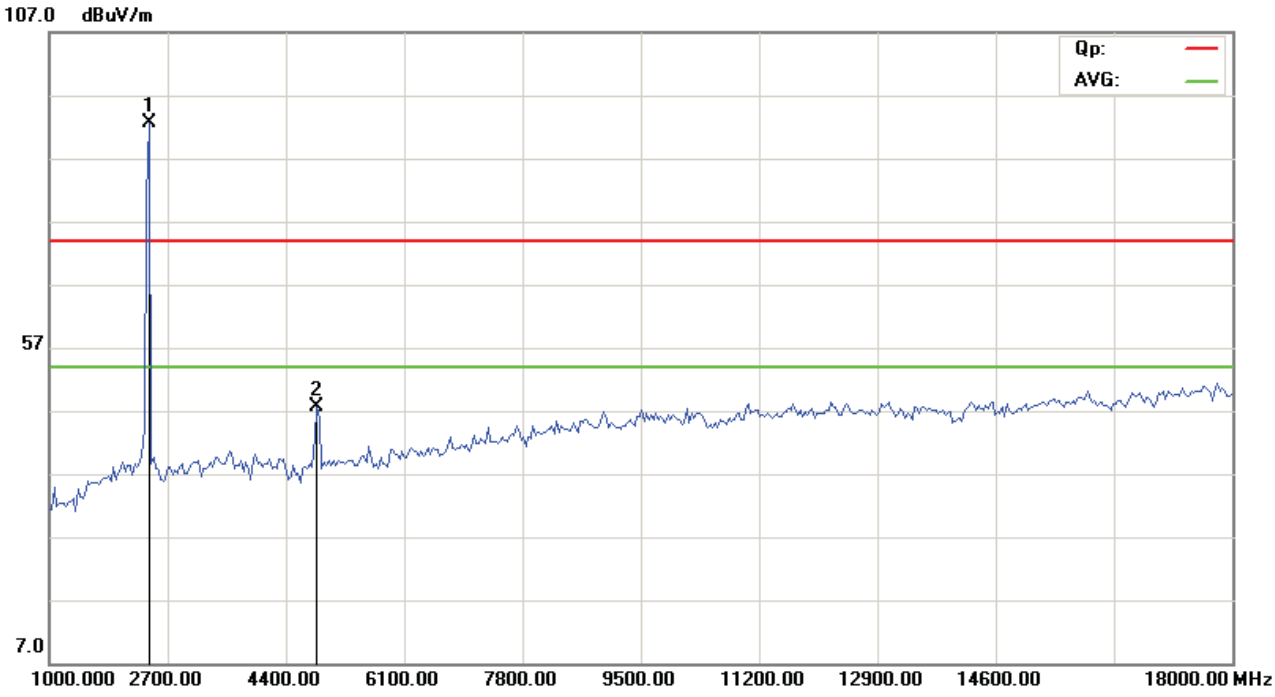
CH01 at 11n HT40: **Horizontal**



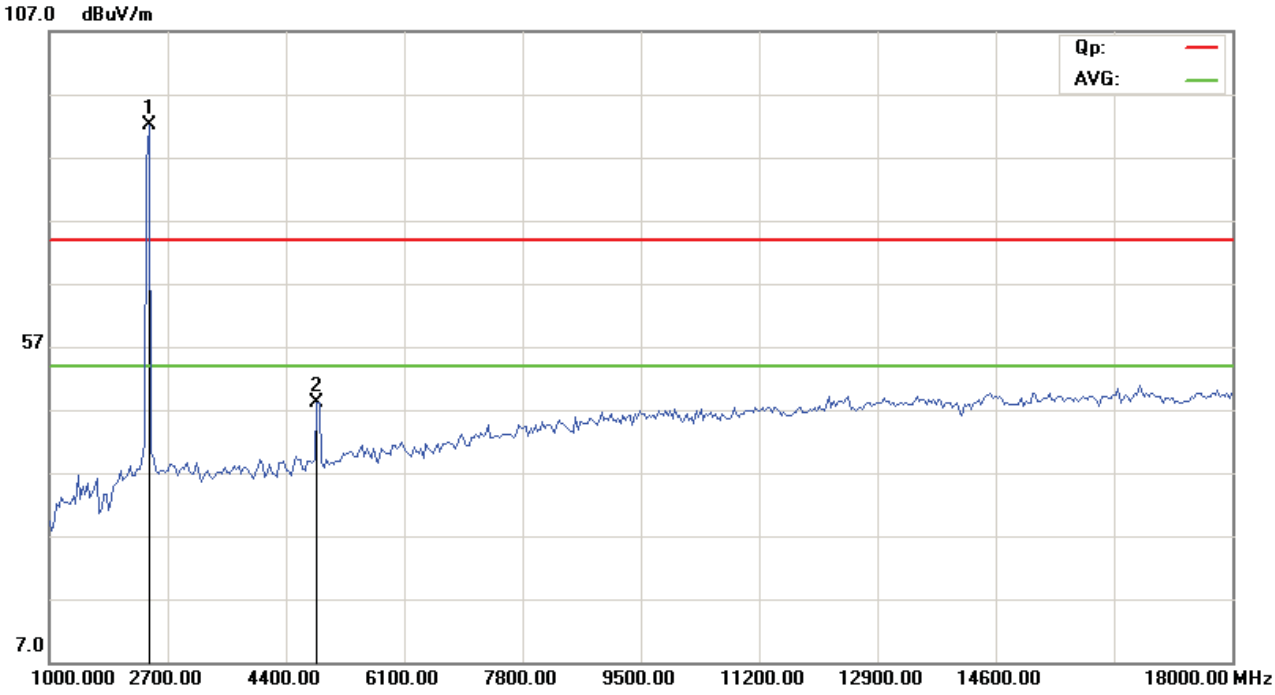
CH01 at 11n HT40: Vertical



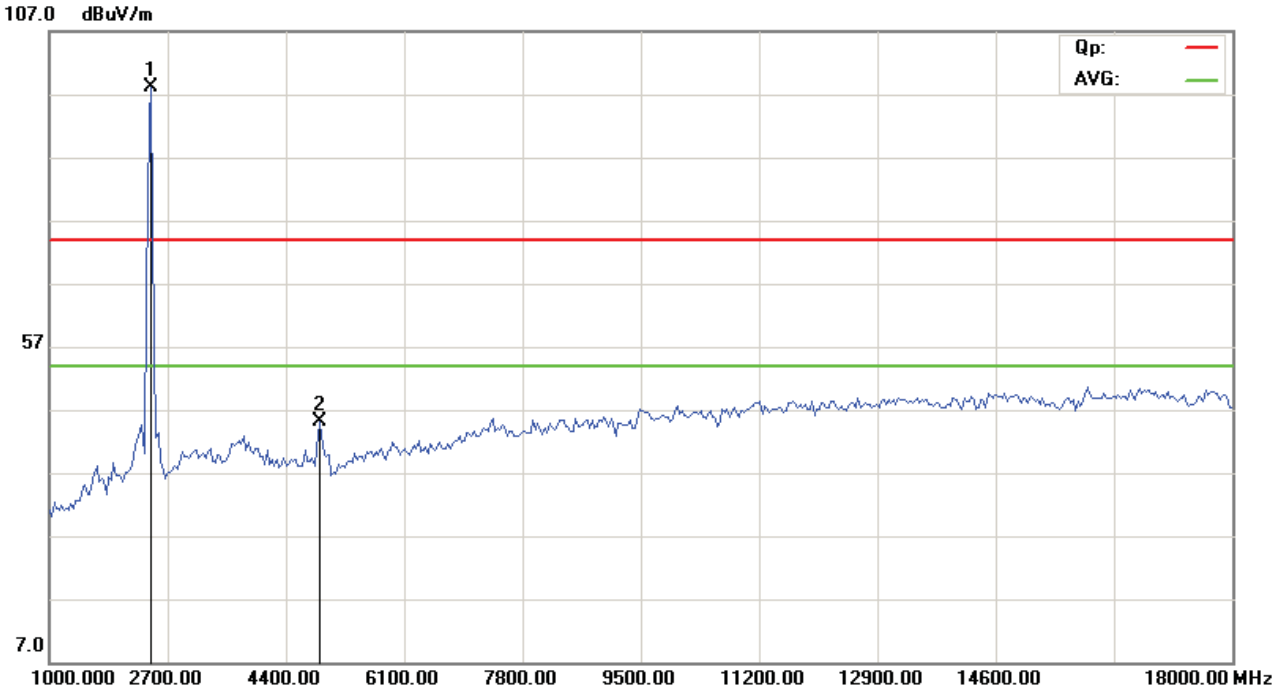
CH04 at 11n HT40: Vertical



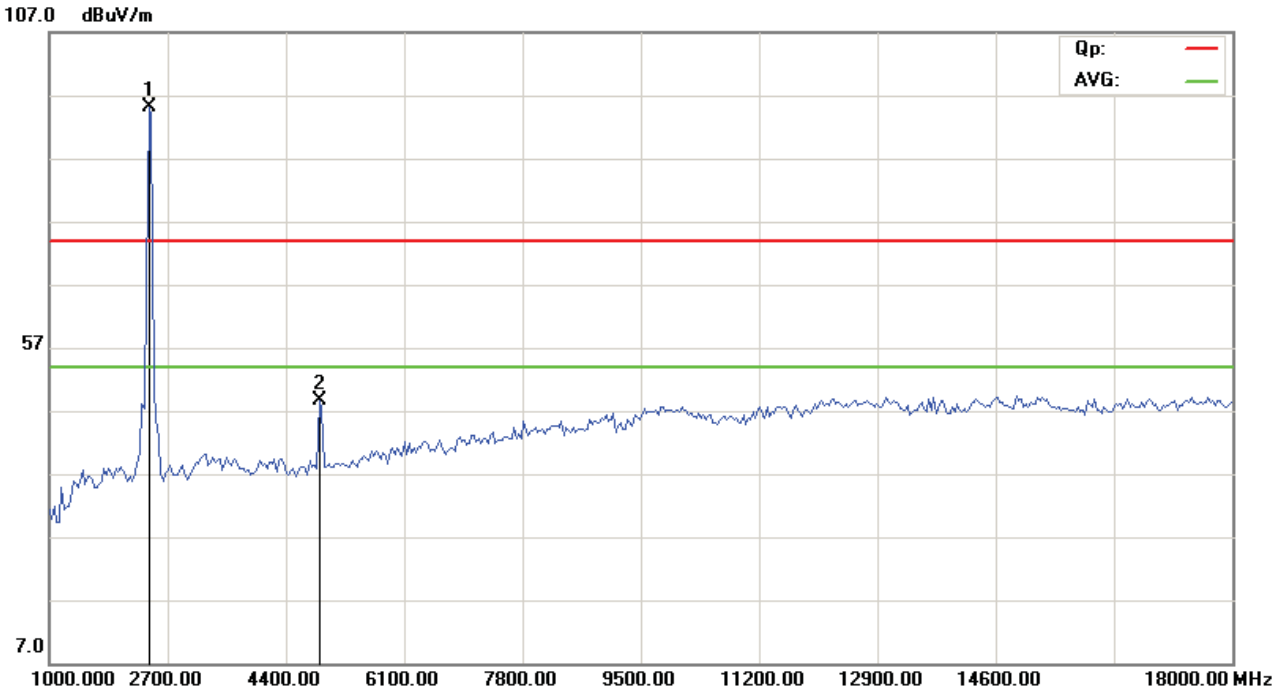
CH04 at 11n HT40: Horizontal



CH07 at 11n HT40: Vertical



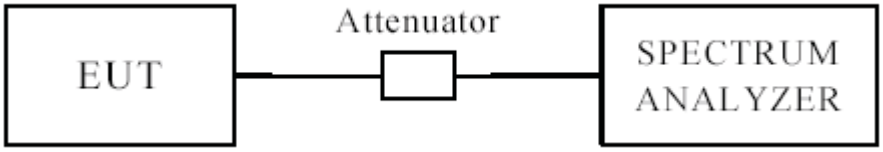
CH07 at 11n HT40: Horizontal



Note: For radiated Emissions from 18-25GHz, it is only the floor noise.

7.0 6dB Bandwidth Measurement

7.1 Test Setup



7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500kHz

7.3 Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.4 Test Result

Remark : only worse case is reported

EUT	MID	Model	MID940S-RK68D
Mode	802.11b	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
1	2412	1	10.08	0.5	Pass
6	2437	1	10.08	0.5	Pass
11	2462	1	10.08	0.5	Pass
1	2412	11	8.64	0.5	Pass
6	2437	11	8.64	0.5	Pass
11	2462	11	8.64	0.5	Pass

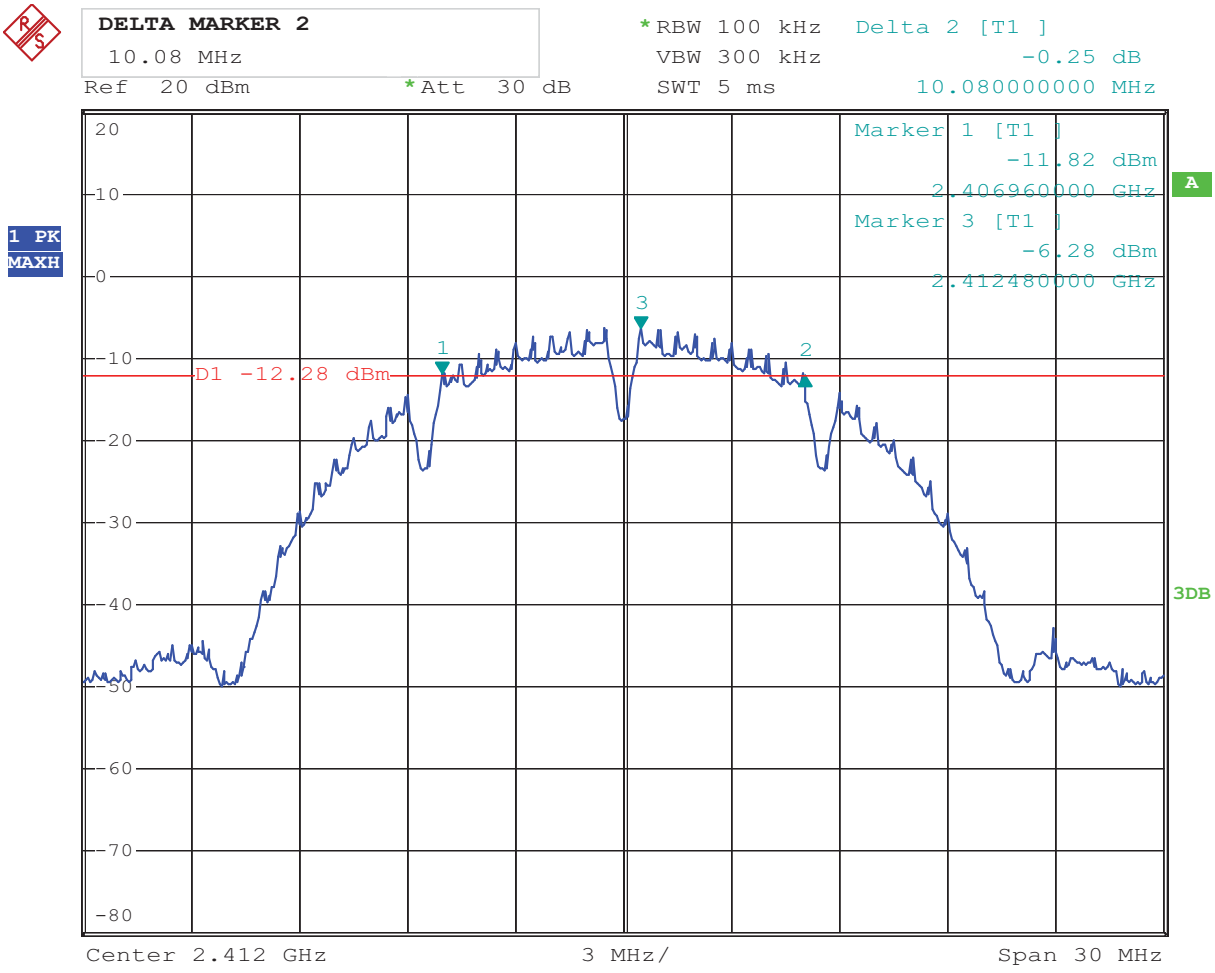
EUT	MID	Model	MID940S-RK68D
Mode	802.11g	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
1	2412	54	16.38	0.5	Pass
6	2437	54	16.38	0.5	Pass
11	2462	54	16.38	0.5	Pass

EUT	MID	Model	MID940S-RK68D
Mode	802.11n	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

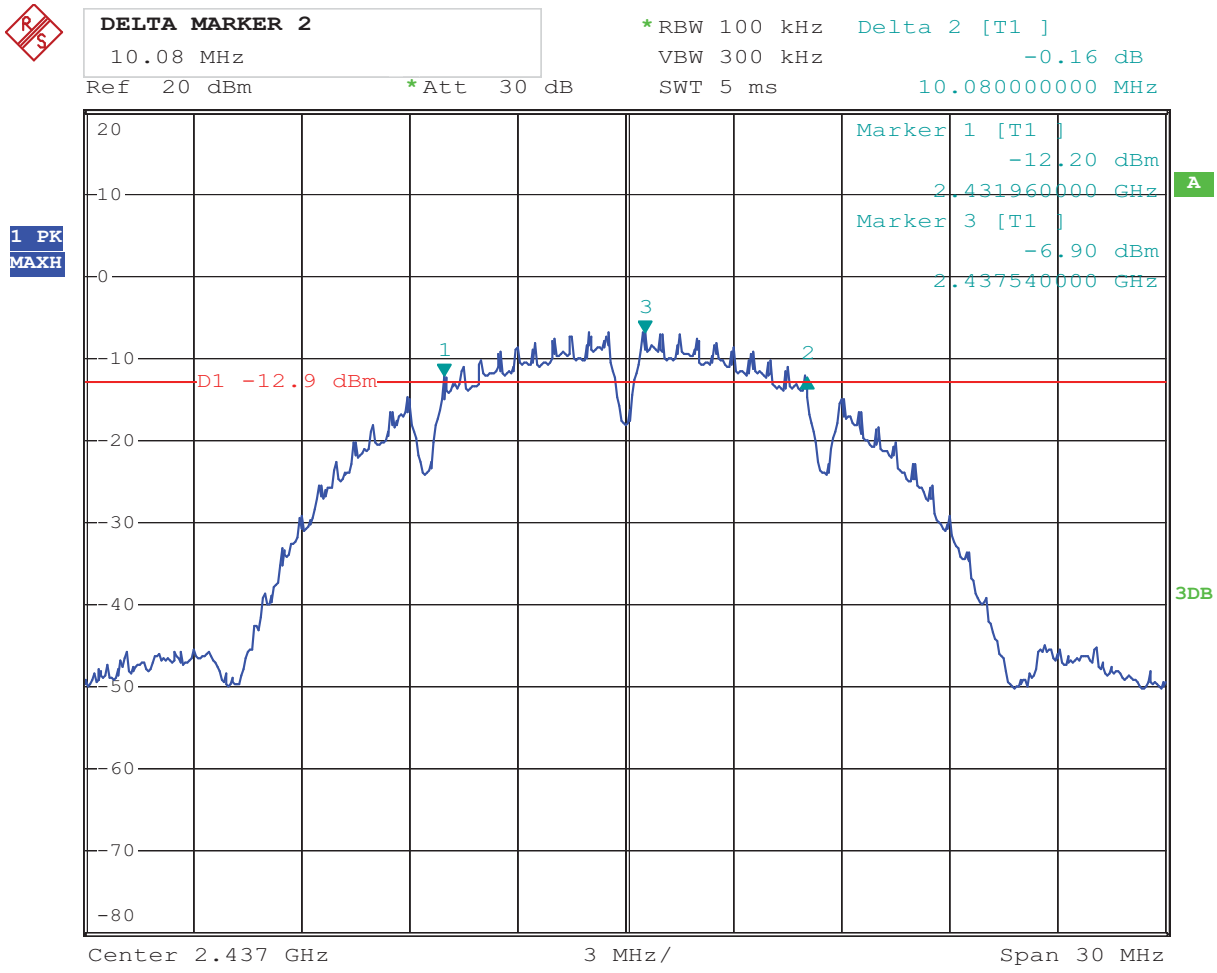
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
1	2412	HT20 65M	17.58	0.5	Pass
6	2437	HT20 65M	17.58	0.5	Pass
11	2462	HT20 65M	17.58	0.5	Pass
1	2422	HT40 65M	35.06	0.5	Pass
4	2437	HT40 65M	35.10	0.5	Pass
7	2452	HT40 65M	35.06	0.5	Pass

1. 802.11b at 1Mbps of CH01

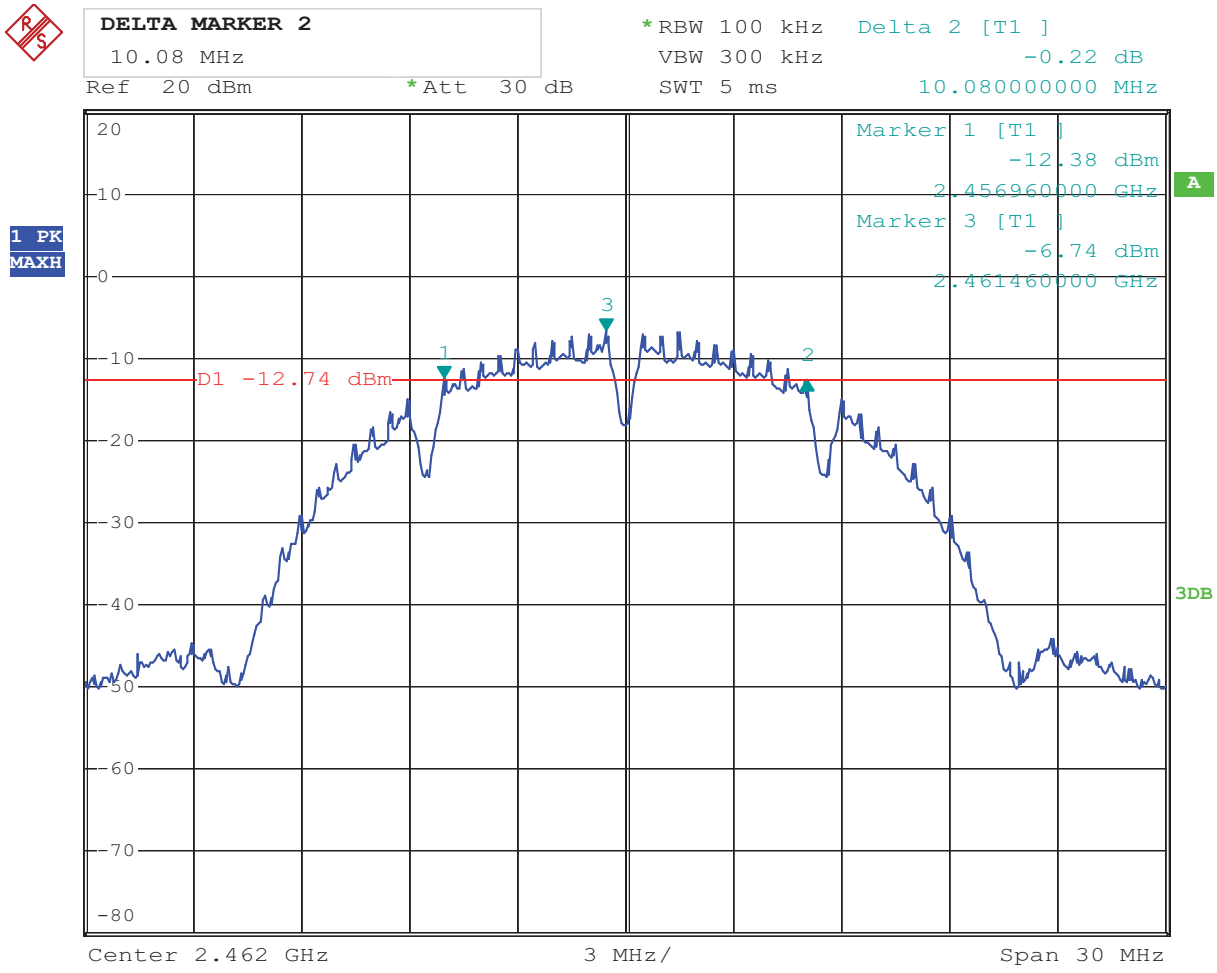


Date: 14.AUG.2013 10:47:44

2. 802.11b at 1Mbps of CH06

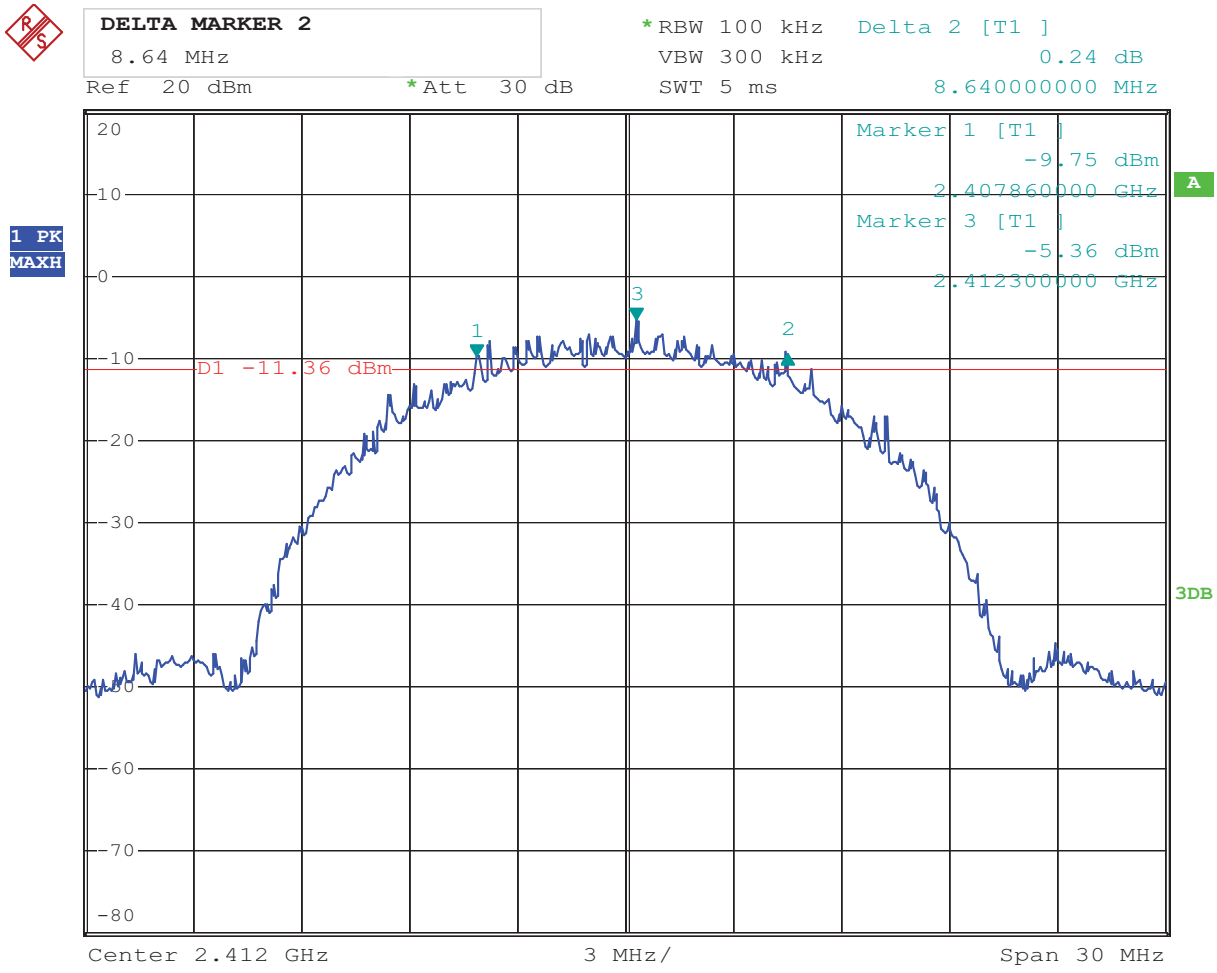


3. 802.11b at 1Mbps of CH11



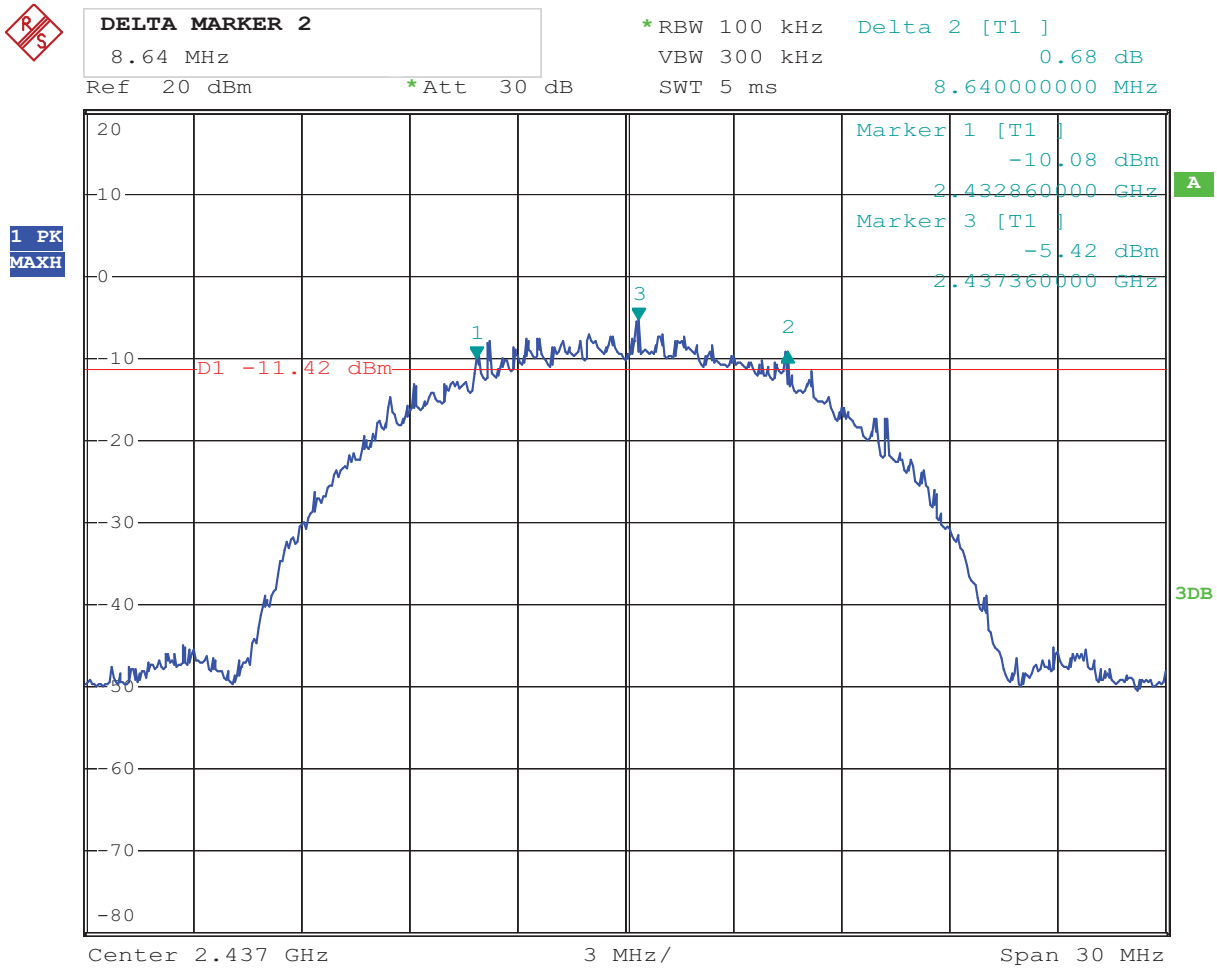
Date: 14.AUG.2013 10:51:17

4. 802.11b at 11Mbps of CH01



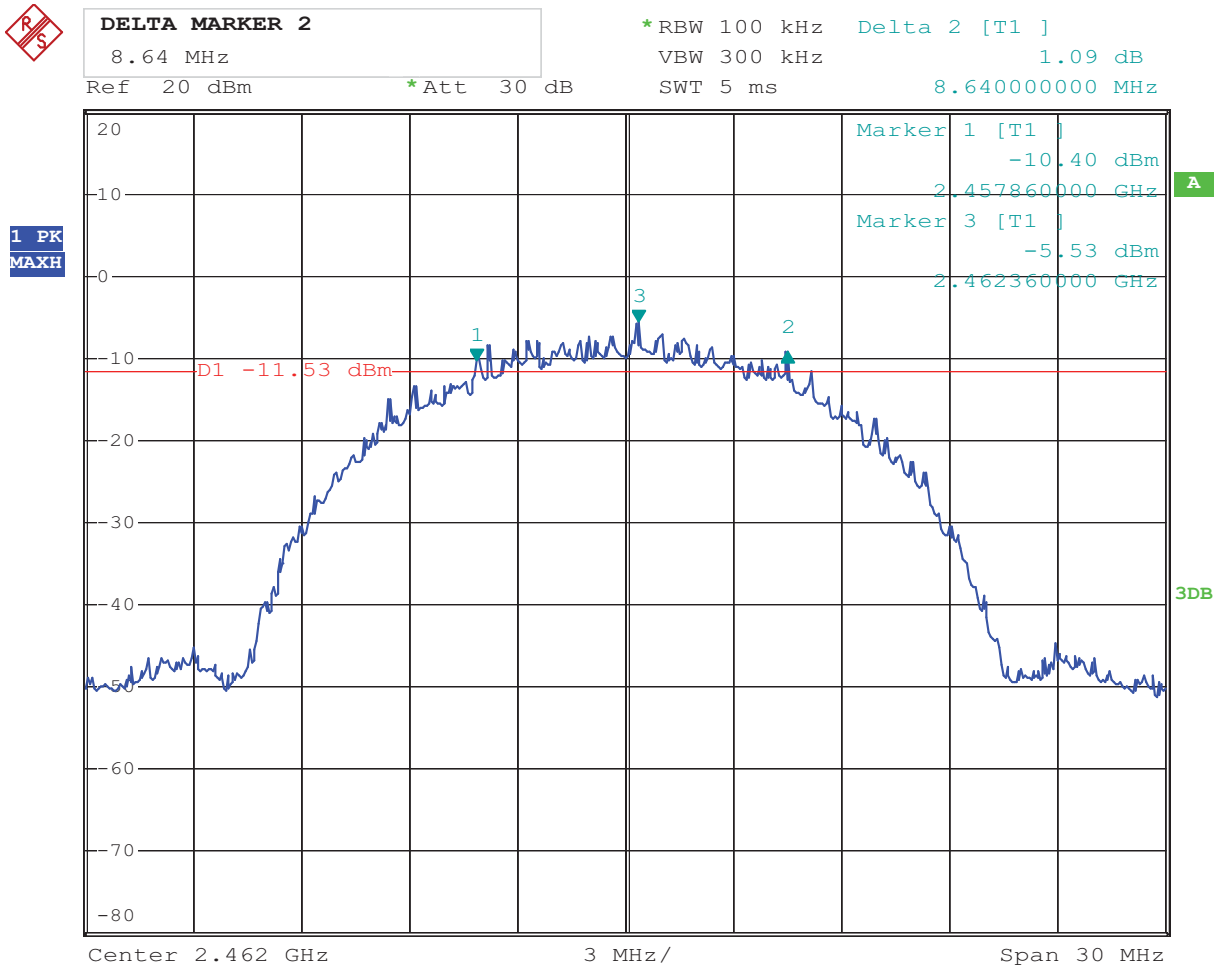
Date: 14.AUG.2013 10:55:59

5. 802.11b at 11Mbps of CH06



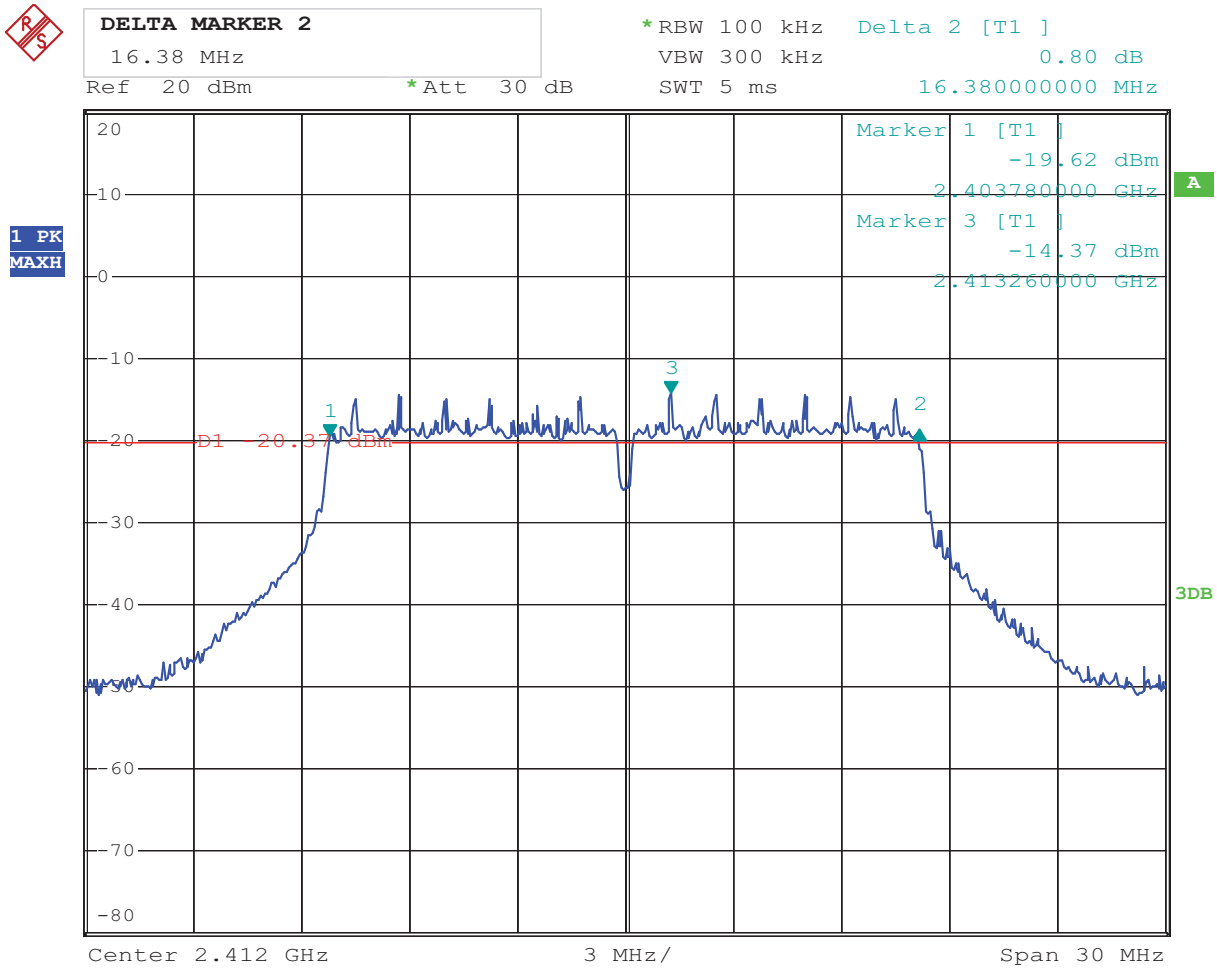
Date: 14.AUG.2013 10:58:40

6. 802.11b at 11Mbps of CH11

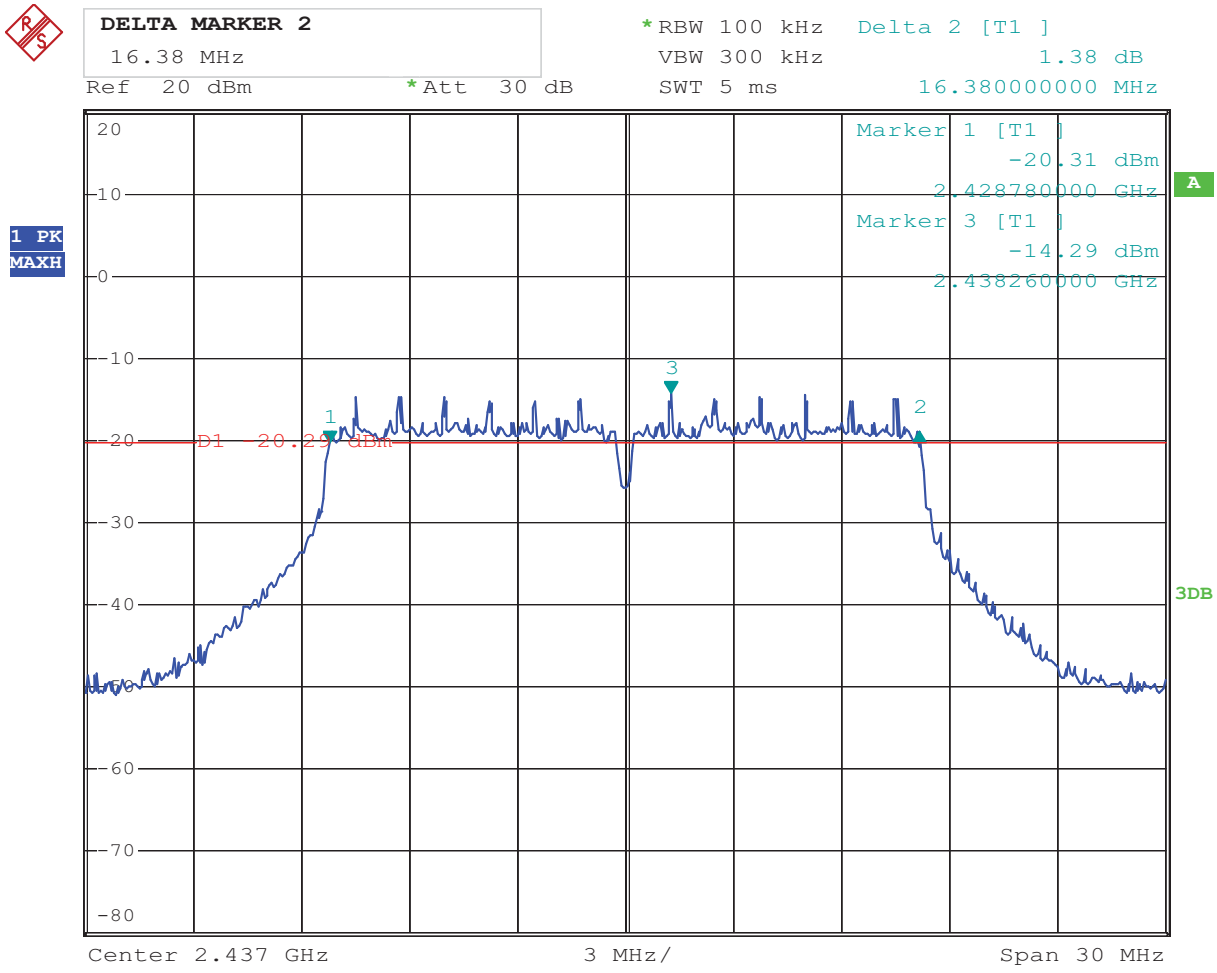


Date: 14.AUG.2013 10:59:38

7. 802.11g at 54 Mbps of CH01

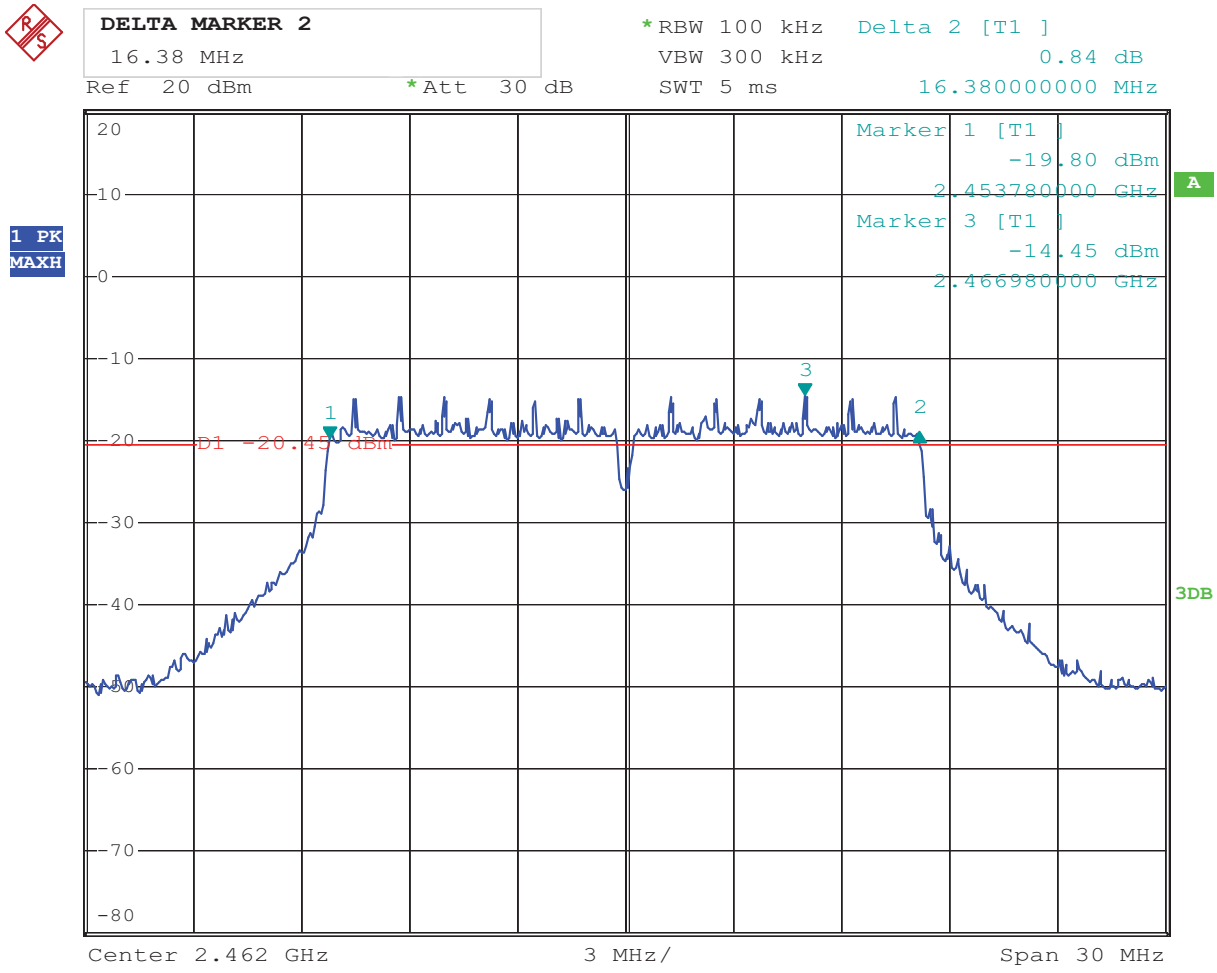


8. 802.11g at 54 Mbps of CH06

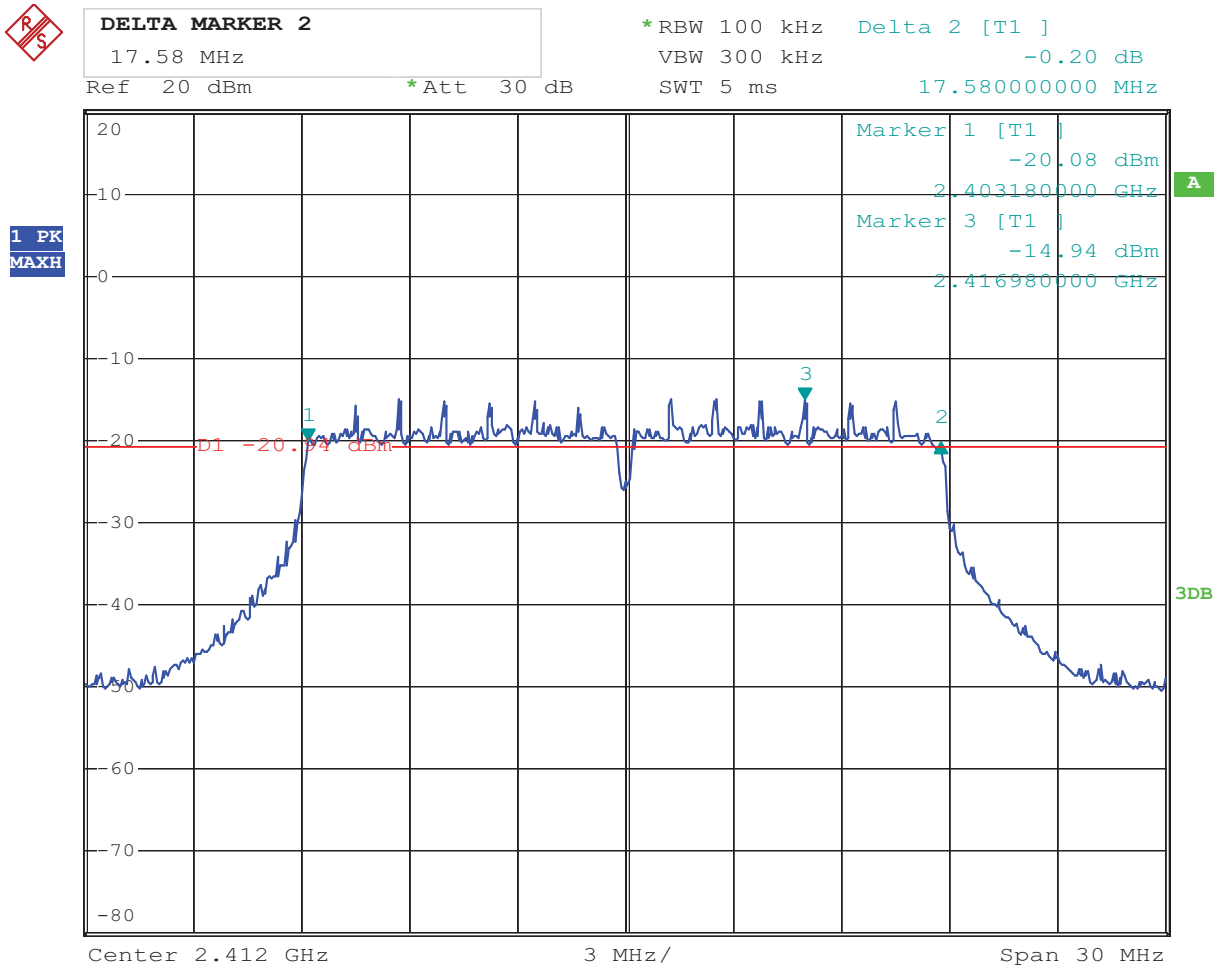


Date: 14.AUG.2013 10:53:33

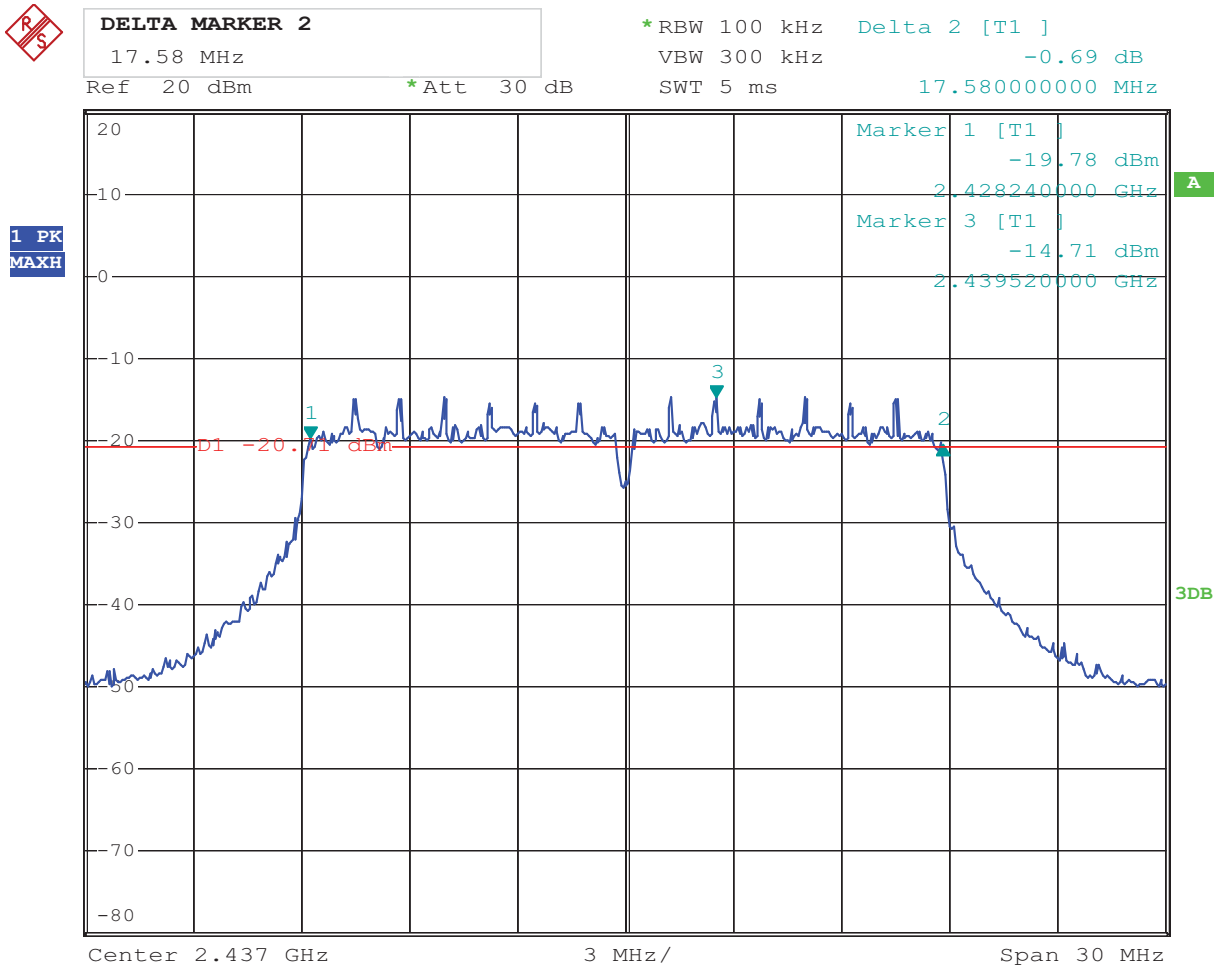
9. 802.11g at 54 Mbps of CH11



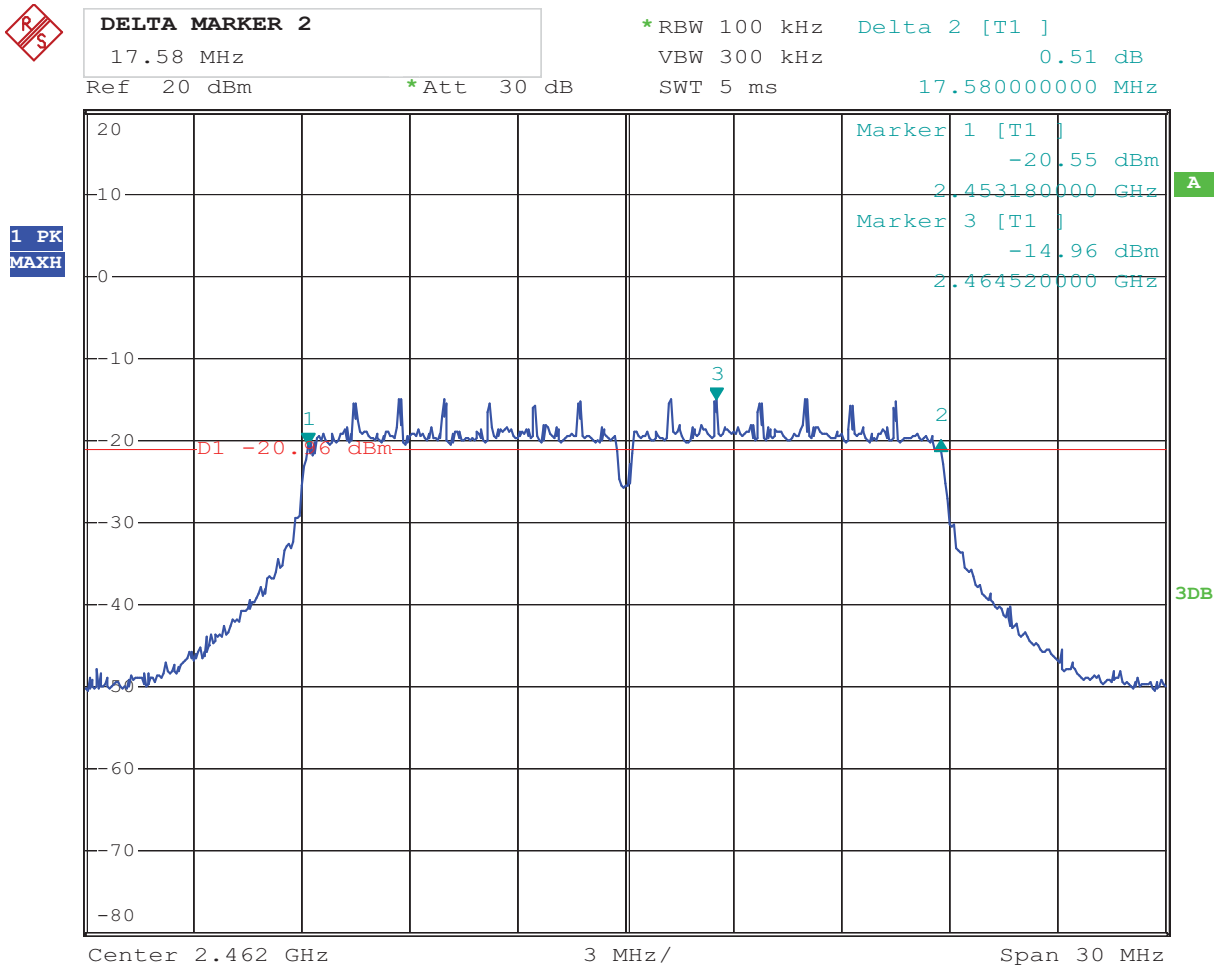
10. 802.11n at HT20 of CH01



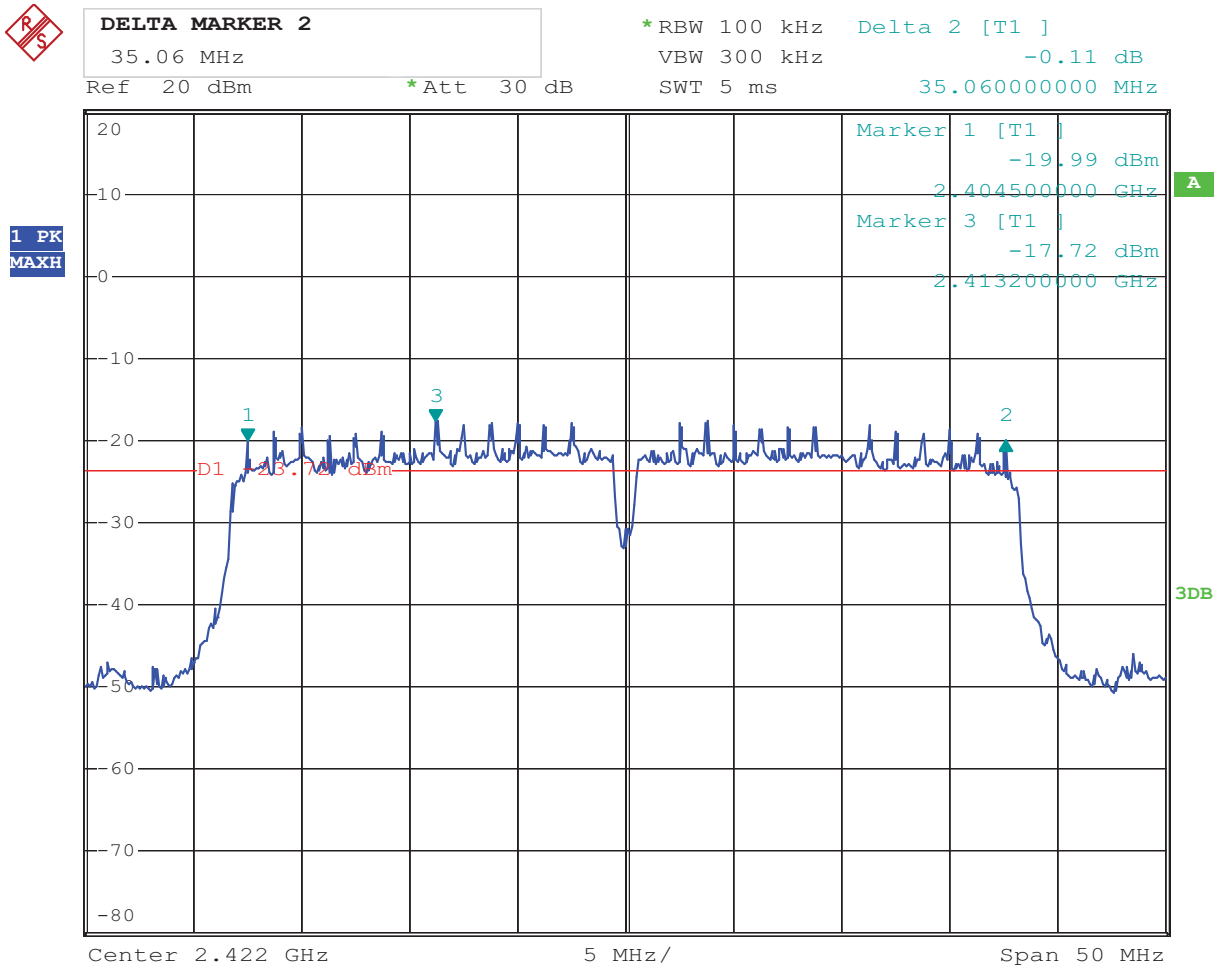
11. 802.11n at HT20 of CH06



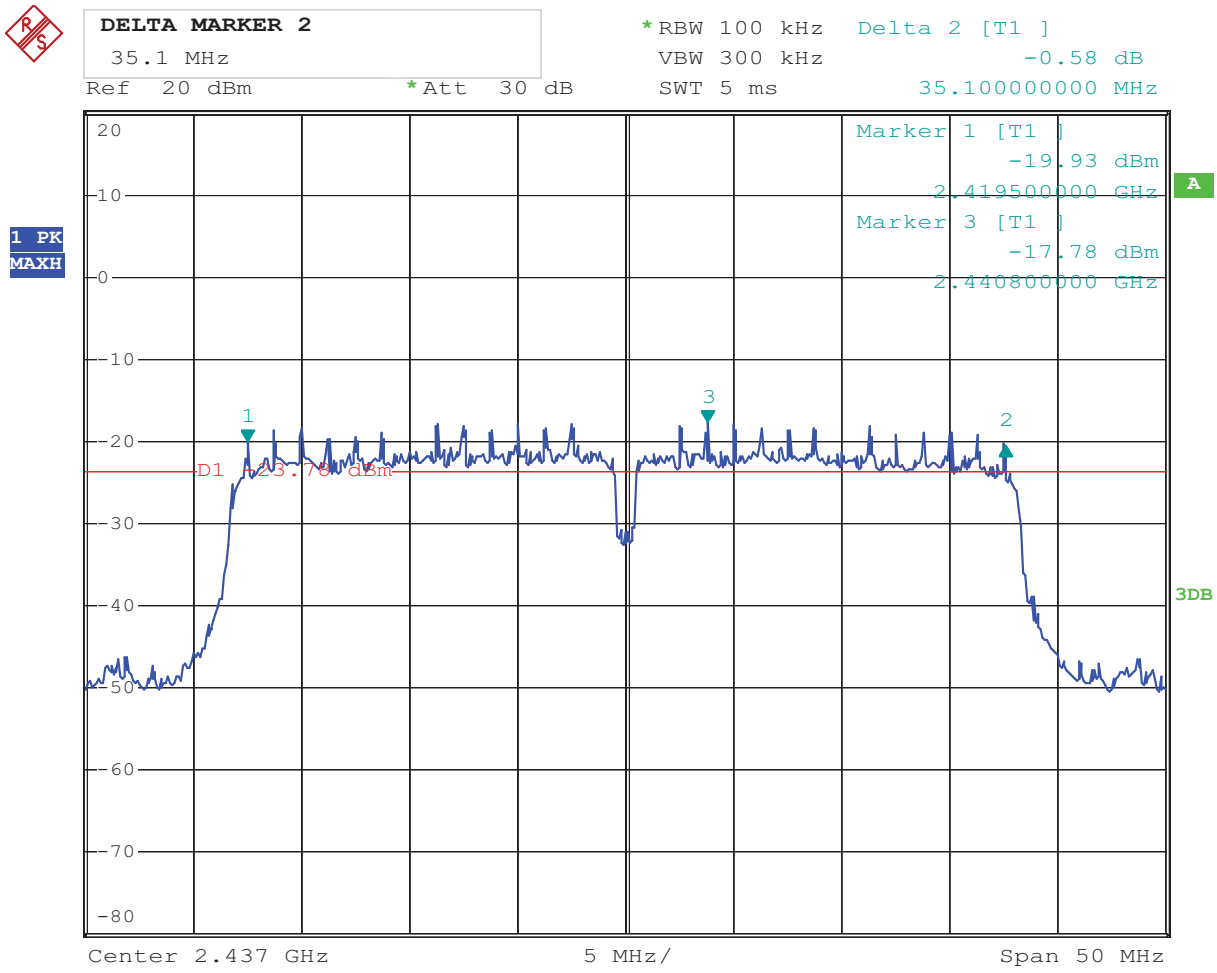
12. 802.11n at HT20 of CH11



13. 802.11n at HT40 of CH01

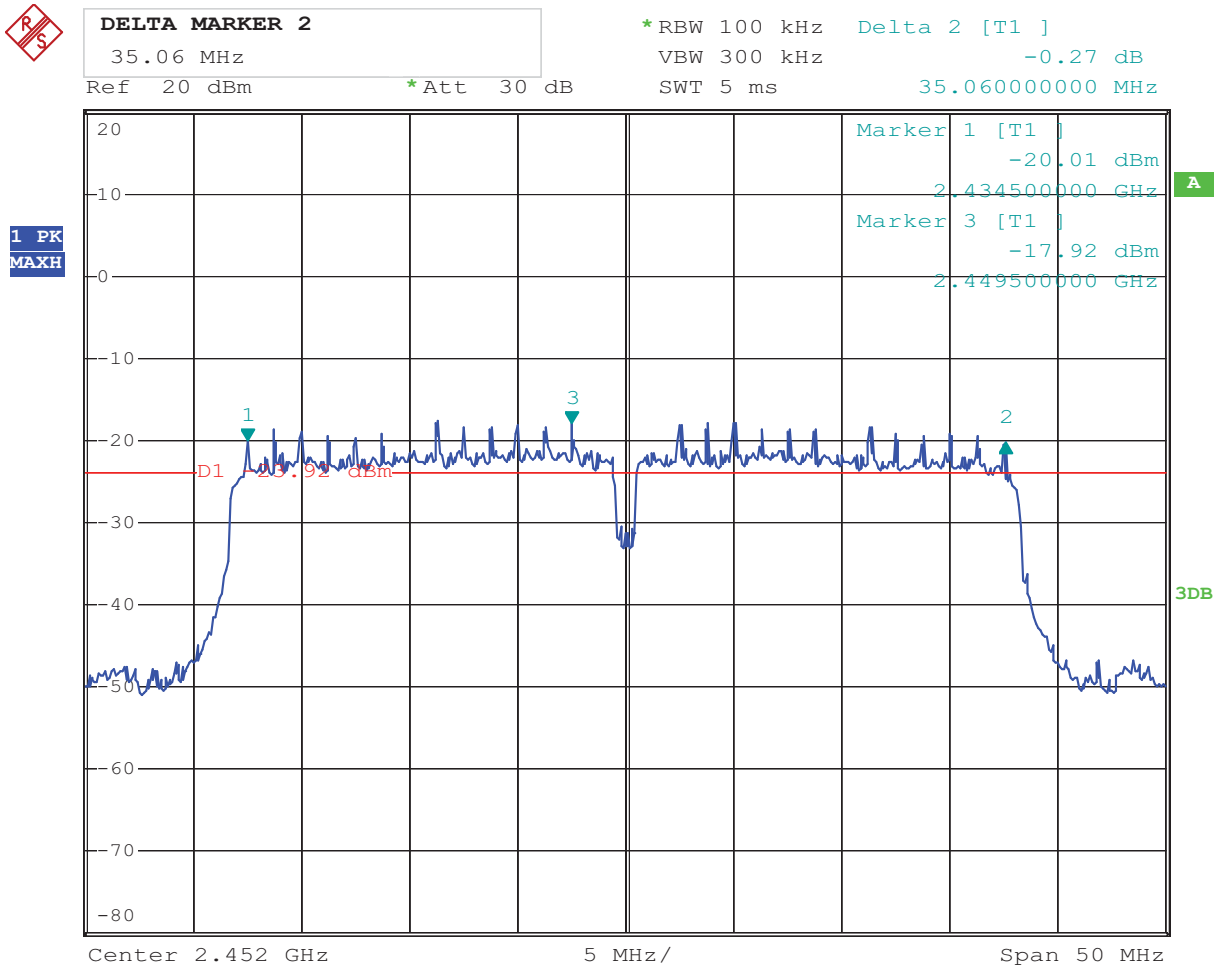


14. 802.11n at HT40 of CH04



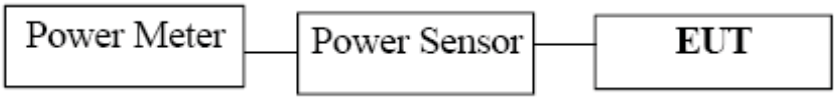
Date: 14.AUG.2013 11:11:21

15. 802.11n at HT40 of CH07



8. Maximum Peak Output Power

8.1 Test Setup



8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the peak power was measured

8.4Test Results

EUT	MID	Model	MID940S-RK68D
Mode	802.11b 11Mbps	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2412	7.72	30	Pass
6	2437	7.62	30	Pass
11	2462	7.50	30	Pass

Note: 1. At finial test to get the worst-case emission at 11Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

EUT	MID	Model	MID940S-RK68D
Mode	802.11g	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2412	4.64	30	Pass
6	2437	4.52	30	Pass
11	2462	4.47	30	Pass

Note: 1. At finial test to get the worst-case emission at 54Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

EUT	MID	Model	MID940S-RK68D
Mode	802.11n HT20	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2412	4.82	30	Pass
6	2437	4.75	30	Pass
11	2462	4.65	30	Pass

Note: 1. At finial test to get the worst-case emission at 65Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

EUT	MID	Model	MID940S-RK68D
Mode	802.11n HT40	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass/ Fail
1	2422	4.54	30	Pass
4	2437	4.52	30	Pass
7	2452	4.51	30	Pass

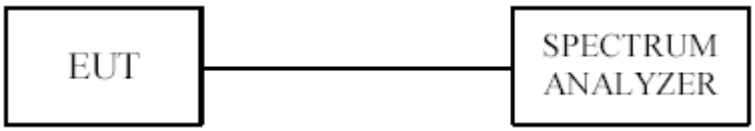
Note: 1. At finial test to get the worst-case emission at 65Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

9. Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

9.3 Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 10 kHz.
3. Set the VBW ≥ 30 kHz.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be ≤ 8 dBm.

Remark : Only worse case is reported

9.4Test Result

EUT	MID	Model	MID940S-RK68D
Mode	802.11b 1Mbps	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Final RF Power Level (dBm)	Maximum Limit (dBm)	Pass/ Fail
1Mbps				
1	2412	-16.78	8	Pass
6	2437	-17.16	8	Pass
11	2462	-17.50	8	Pass

Note: At finial test to get the worst-case emission at 1Mbps for CH01, CH06 and CH11

EUT	MID	Model	MID940S-RK68D
Mode	802.11b 11Mbps	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Final RF Power Level (dBm)	Maximum Limit (dBm)	Pass/ Fail
11Mbps				
1	2412	-15.36	8	Pass
6	2437	-15.67	8	Pass
11	2462	-15.63	8	Pass

Note: At finial test to get the worst-case emission at 11Mbps for CH01, CH06 and CH11

EUT	MID	Model	MID940S-RK68D
Mode	802.11g	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Final RF Power Level (dBm)	Maximum Limit (dBm)	Pass/ Fail
54Mbps				
1	2412	-25.39	8	Pass
6	2437	-25.17	8	Pass
11	2462	-24.91	8	Pass

Note: At finial test to get the worst-case emission at 54Mbps for CH01, CH06 and CH11

EUT	MID	Model	MID940S-RK68D
Mode	802.11n HT20	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Final RF Power Level (dBm)	Maximum Limit (dBm)	Pass/ Fail
11n HT20				
1	2412	-23.91	8	Pass
6	2437	-24.07	8	Pass
11	2462	-23.90	8	Pass

Note: At finial test to get the worst-case emission at 65M for CH01, CH06 and CH11

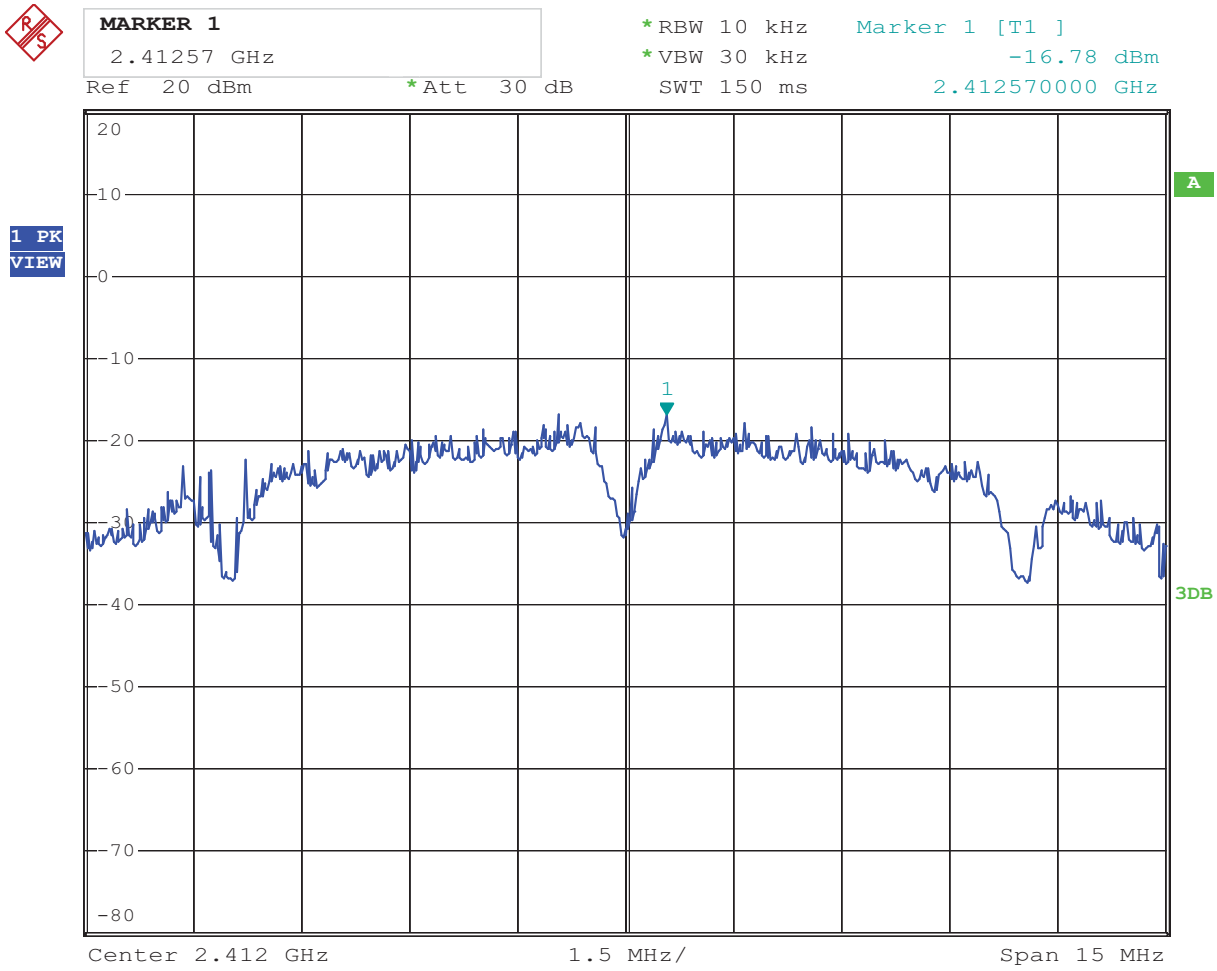
EUT	MID	Model	MID940S-RK68D
Mode	802.11n HT40	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH

Channel	Channel Frequency (MHz)	Final RF Power Level (dBm)	Maximum Limit (dBm)	Pass/ Fail
11n HT40				
1	2422	-27.39	8	Pass
4	2437	-27.40	8	Pass
7	2452	-27.33	8	Pass

Note: At finial test to get the worst-case emission at 65Mfor CH01, CH04 and CH07

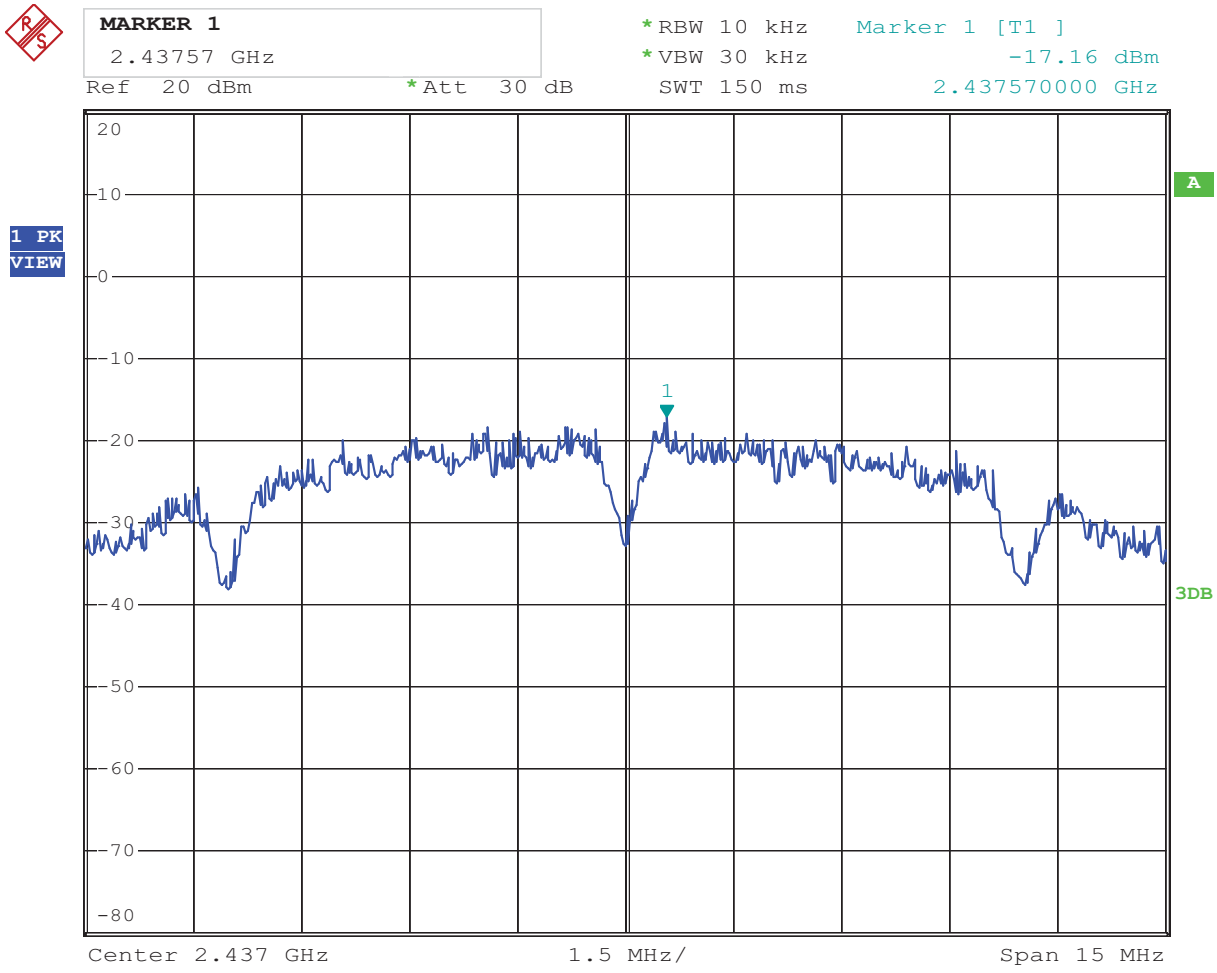
9.5 Photo of Power Spectral Density Measurement

1. 802.11b at 1Mbps of CH01

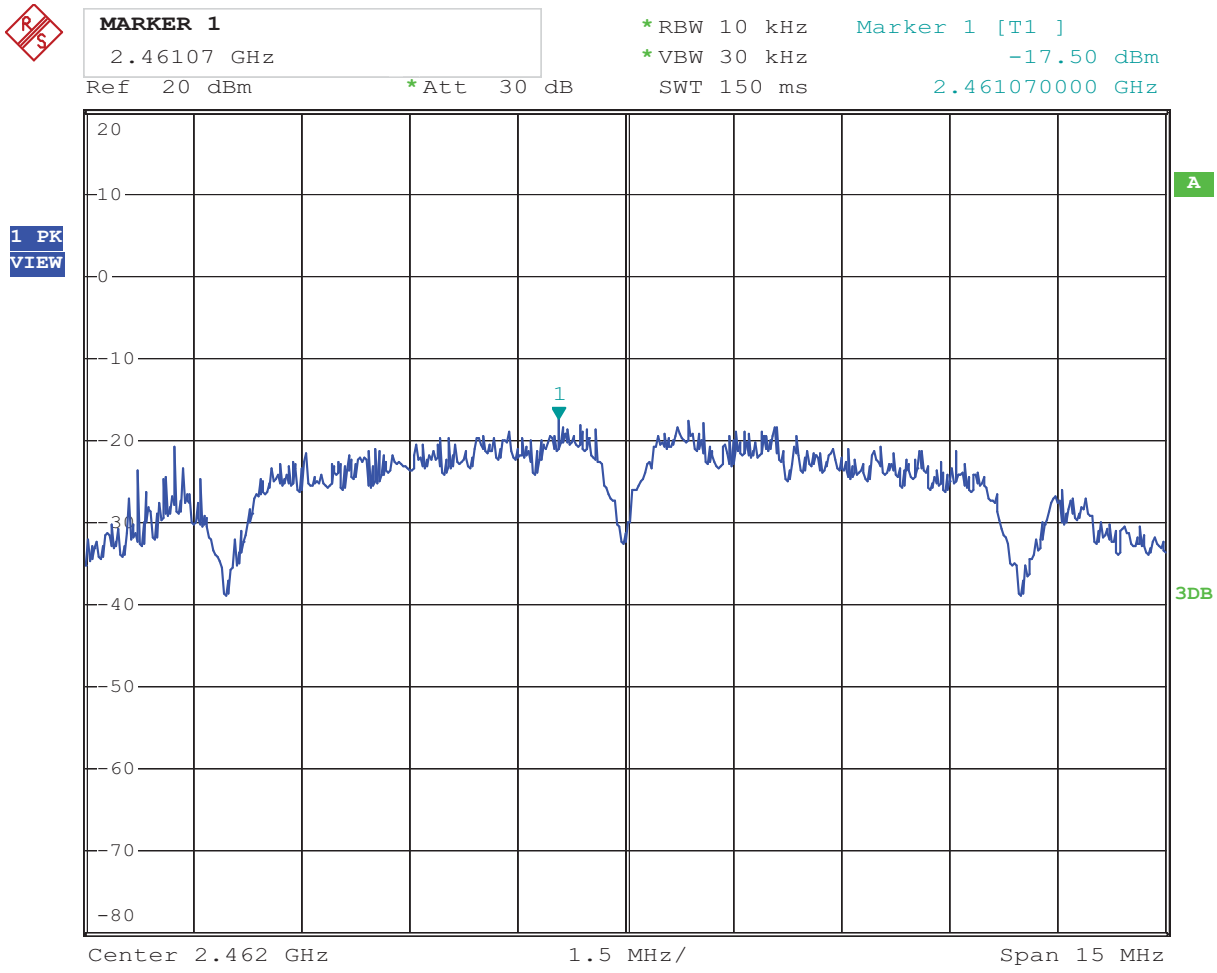


Date: 14.AUG.2013 11:23:33

2. 802.11b at 1Mbps of CH06

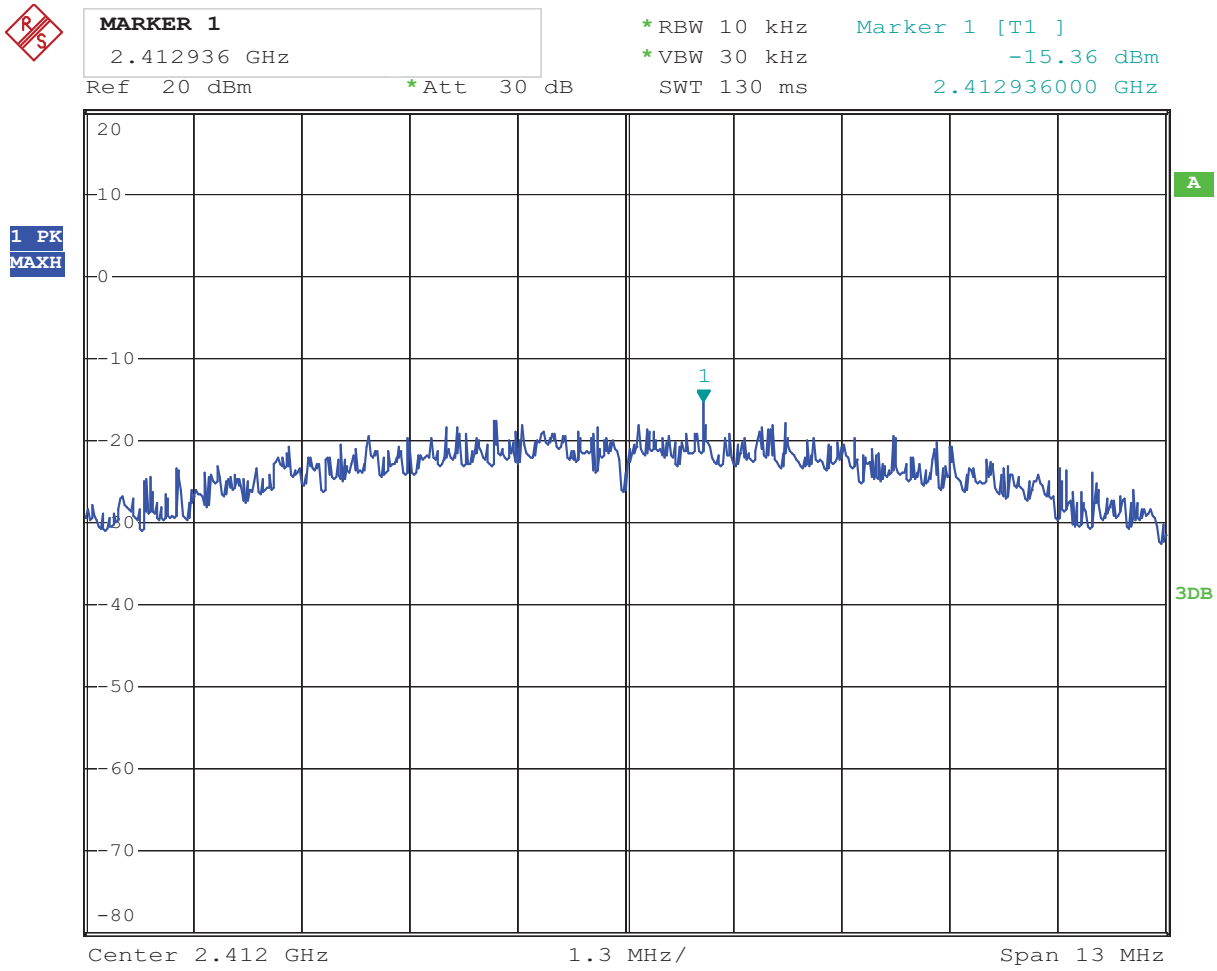


3. 802.11b at 1Mbps of CH11



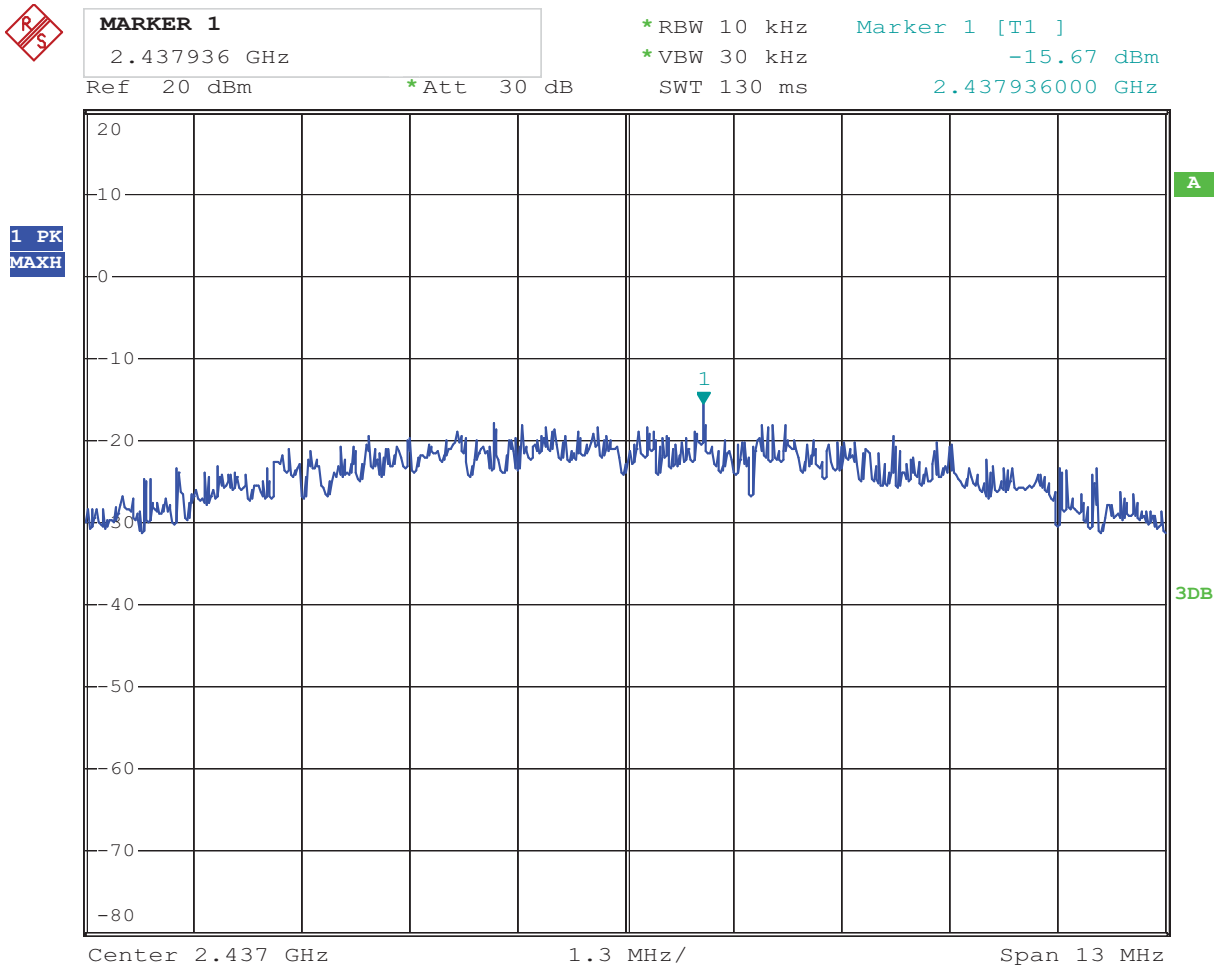
Date: 14.AUG.2013 11:24:29

4. 802.11b at 11Mbps of CH01



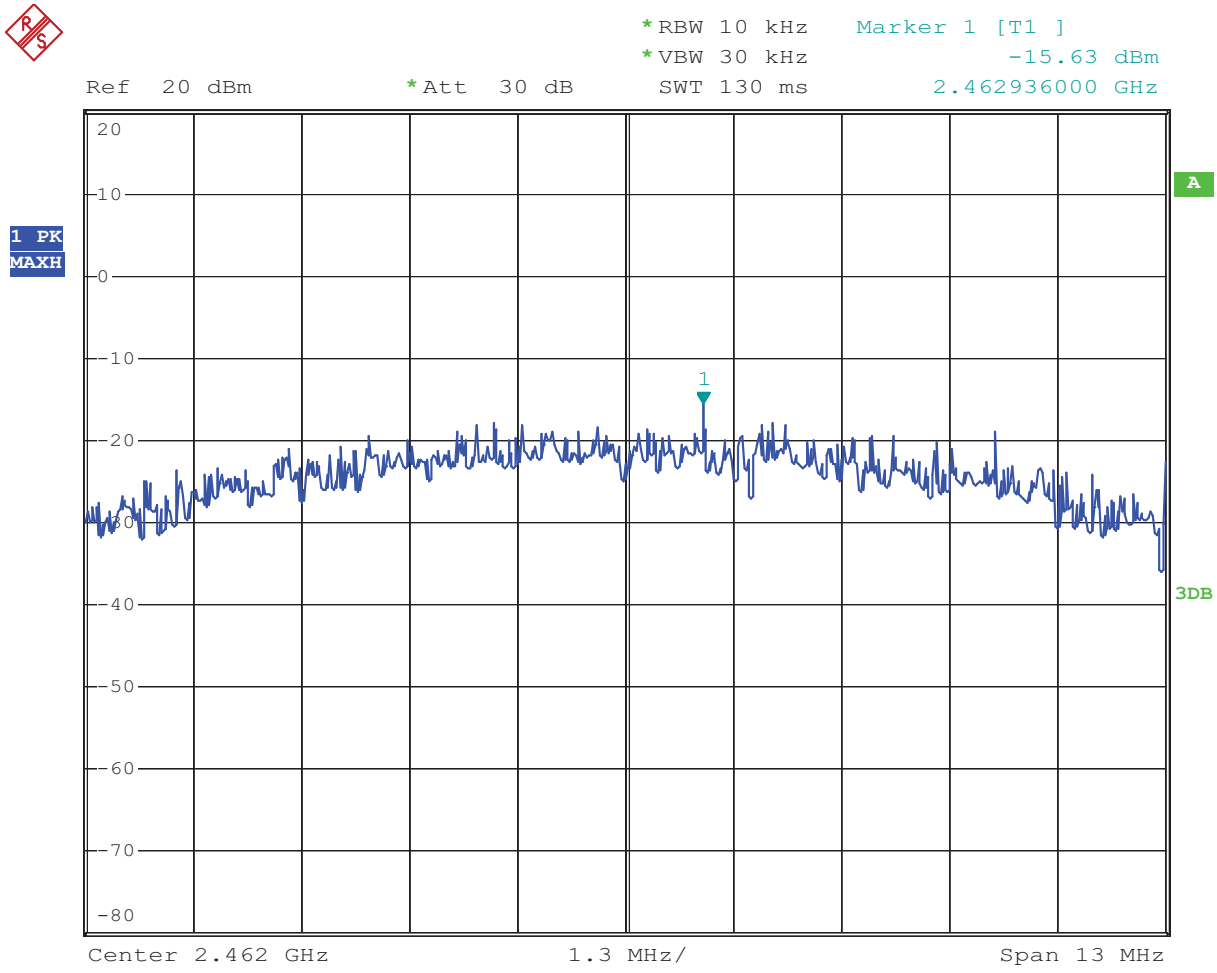
Date: 14.AUG.2013 11:27:13

5. 802.11b at 11Mbps of CH06



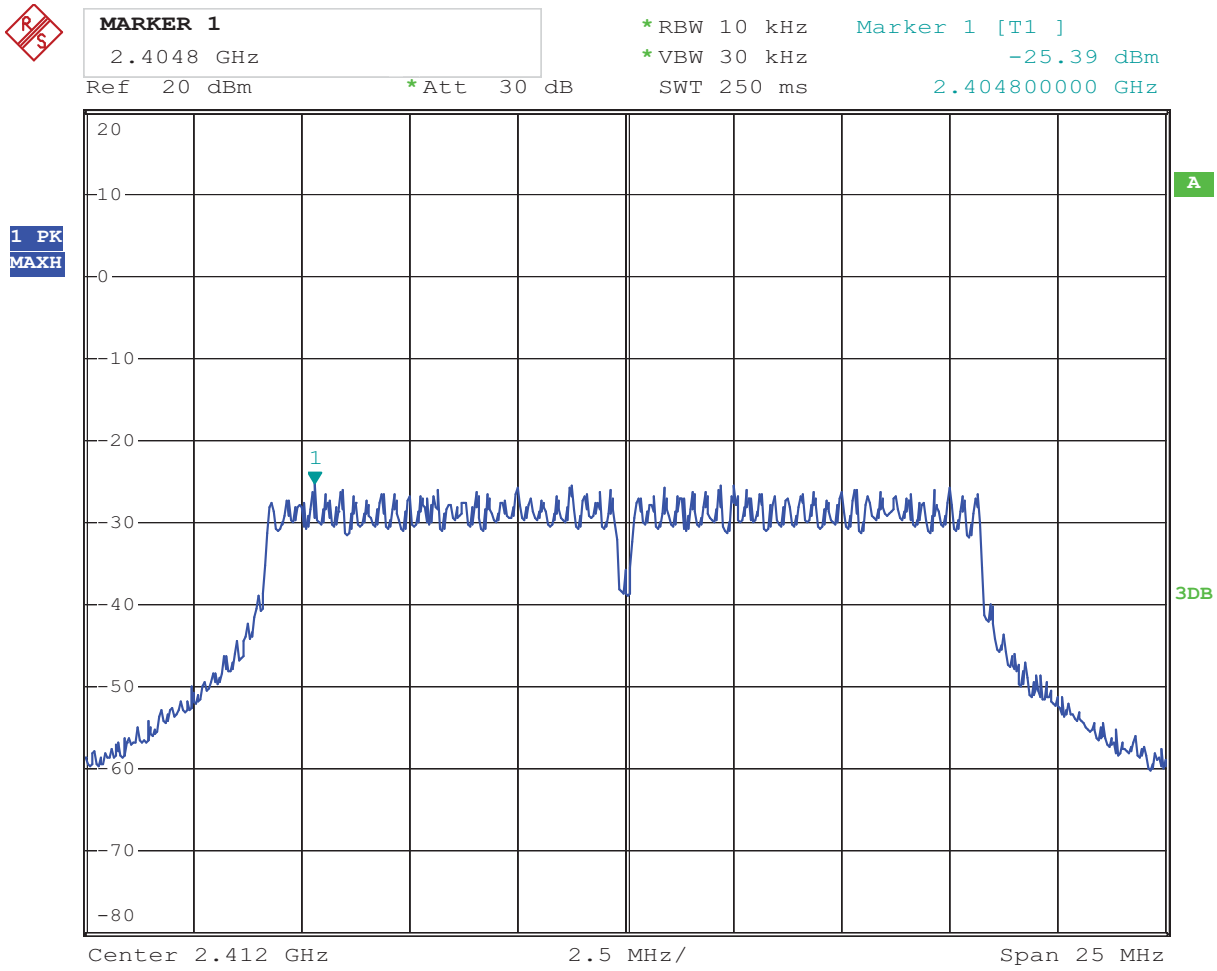
Date: 14.AUG.2013 11:27:58

6. 802.11b at 11Mbps of CH11



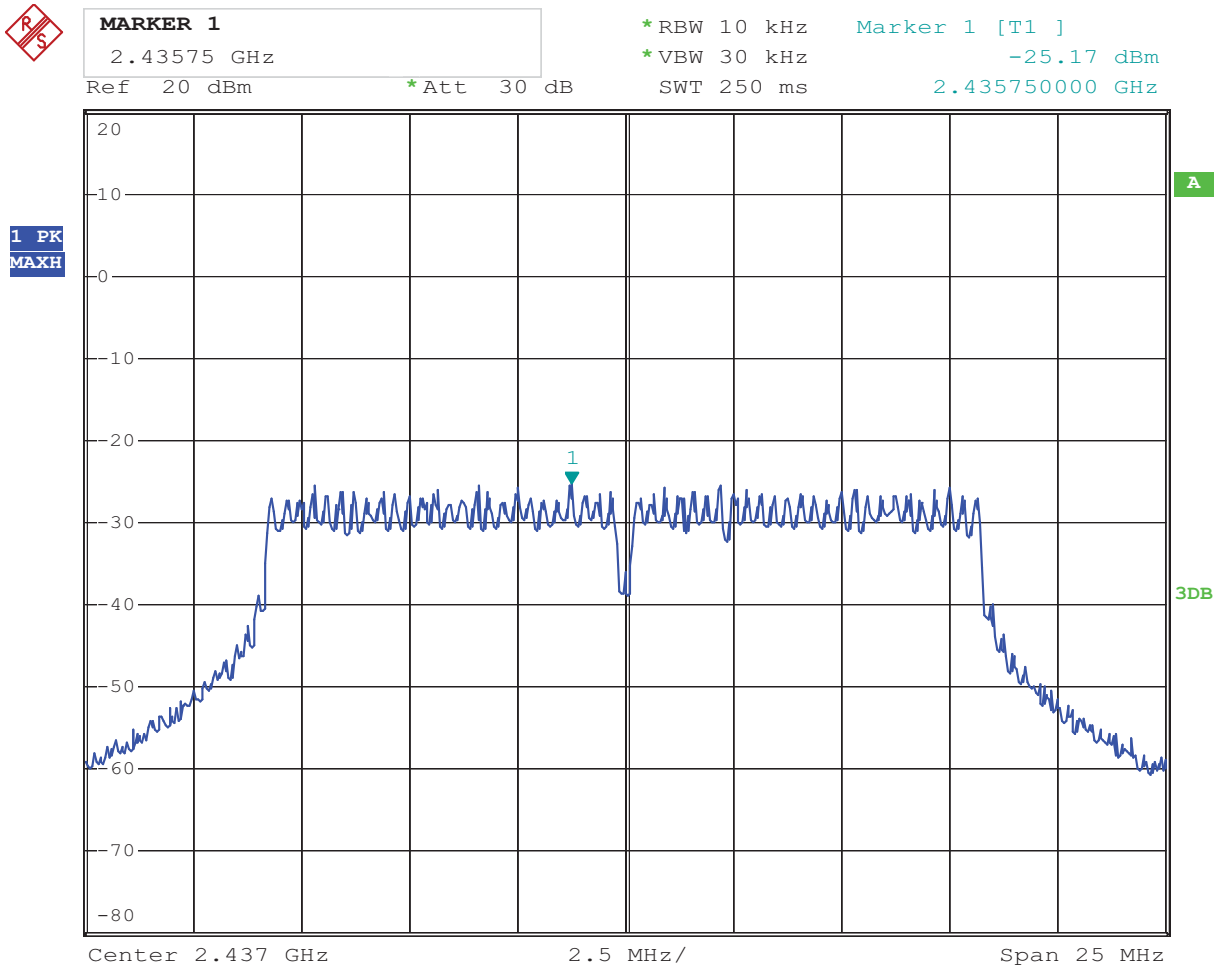
Date: 14.AUG.2013 11:29:03

7. 802.11g at 54Mbps of CH1

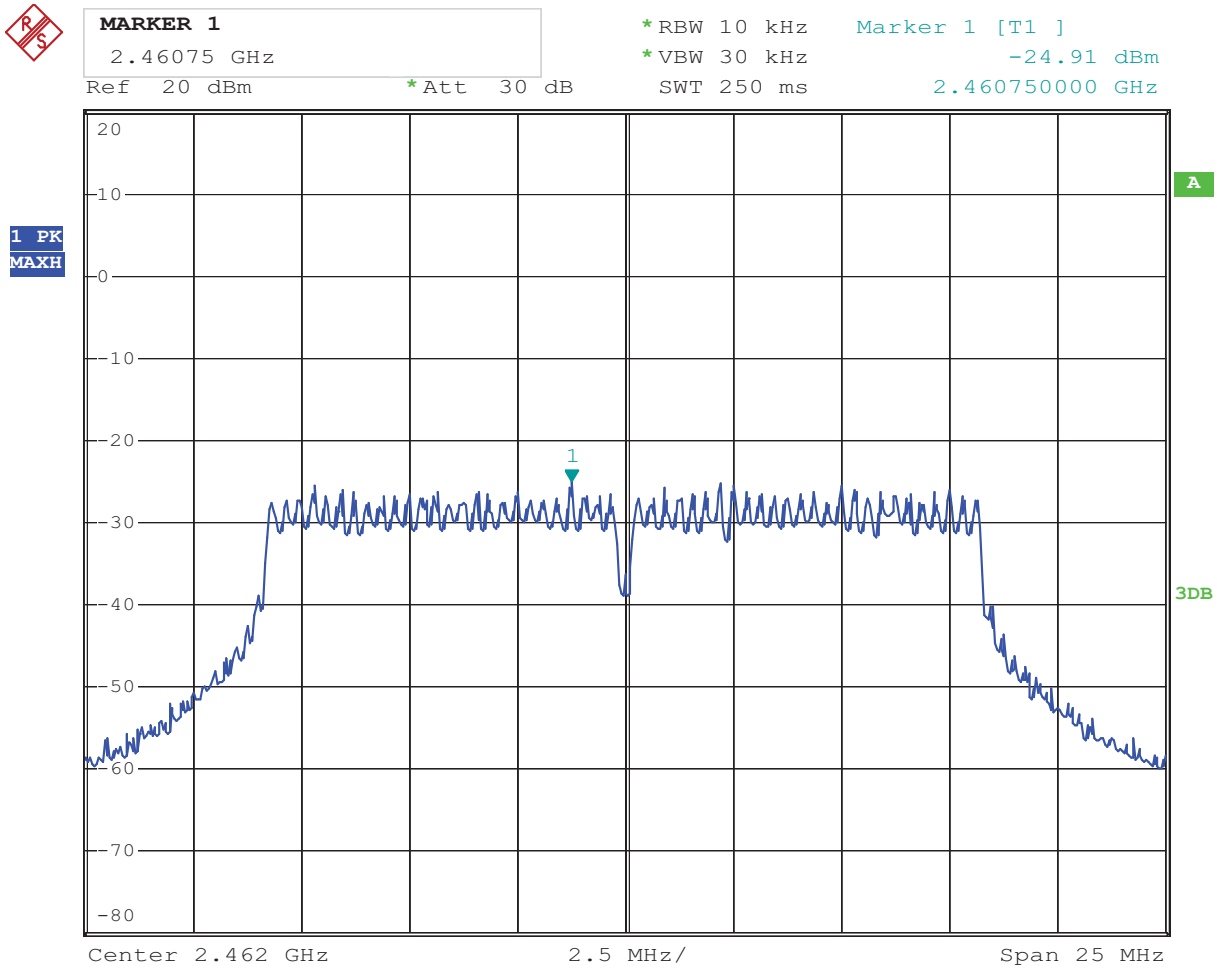


Date: 14.AUG.2013 11:26:41

8. 802.11g at 54Mbps of CH6

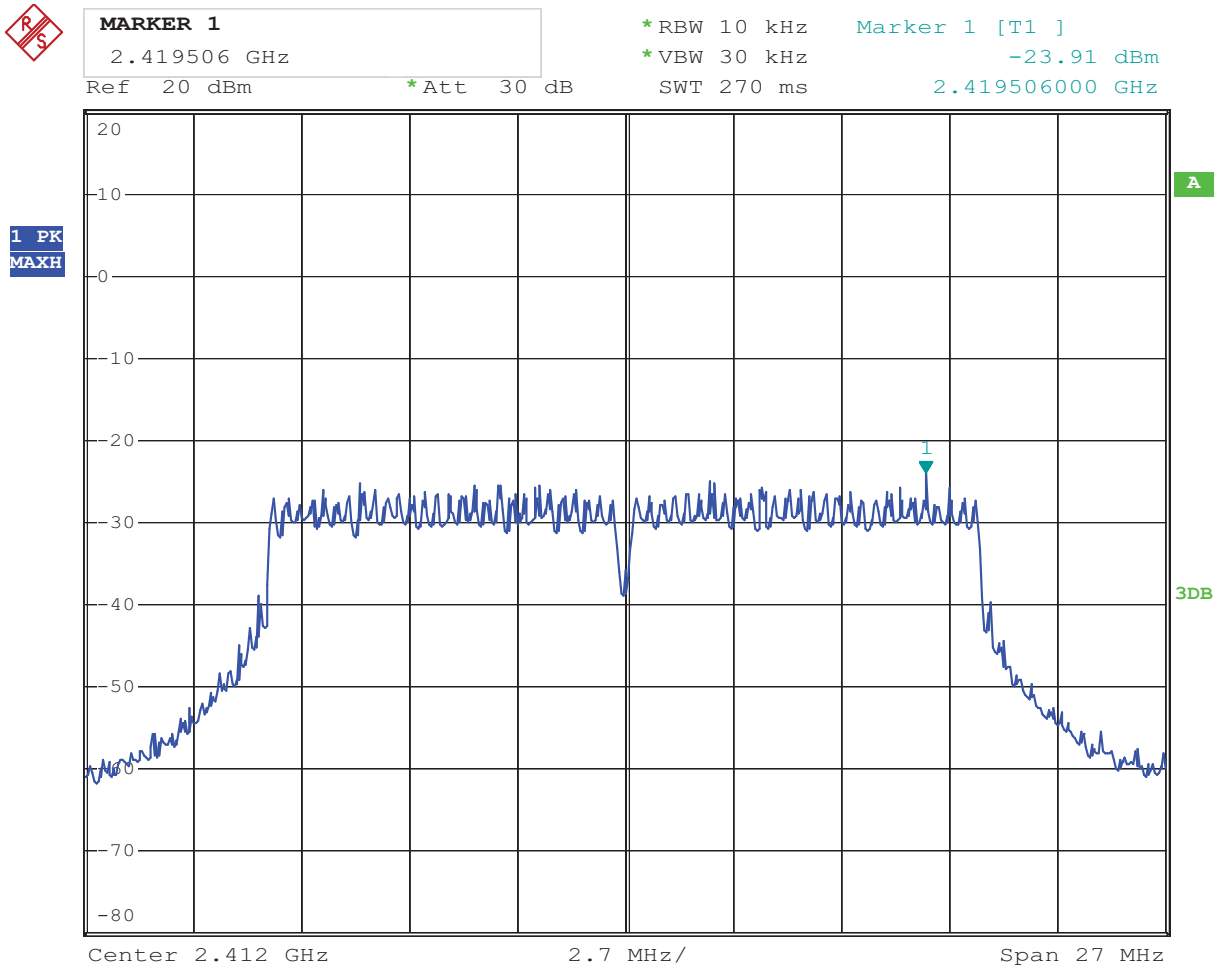


9. 802.11g at 54Mbps of CH11



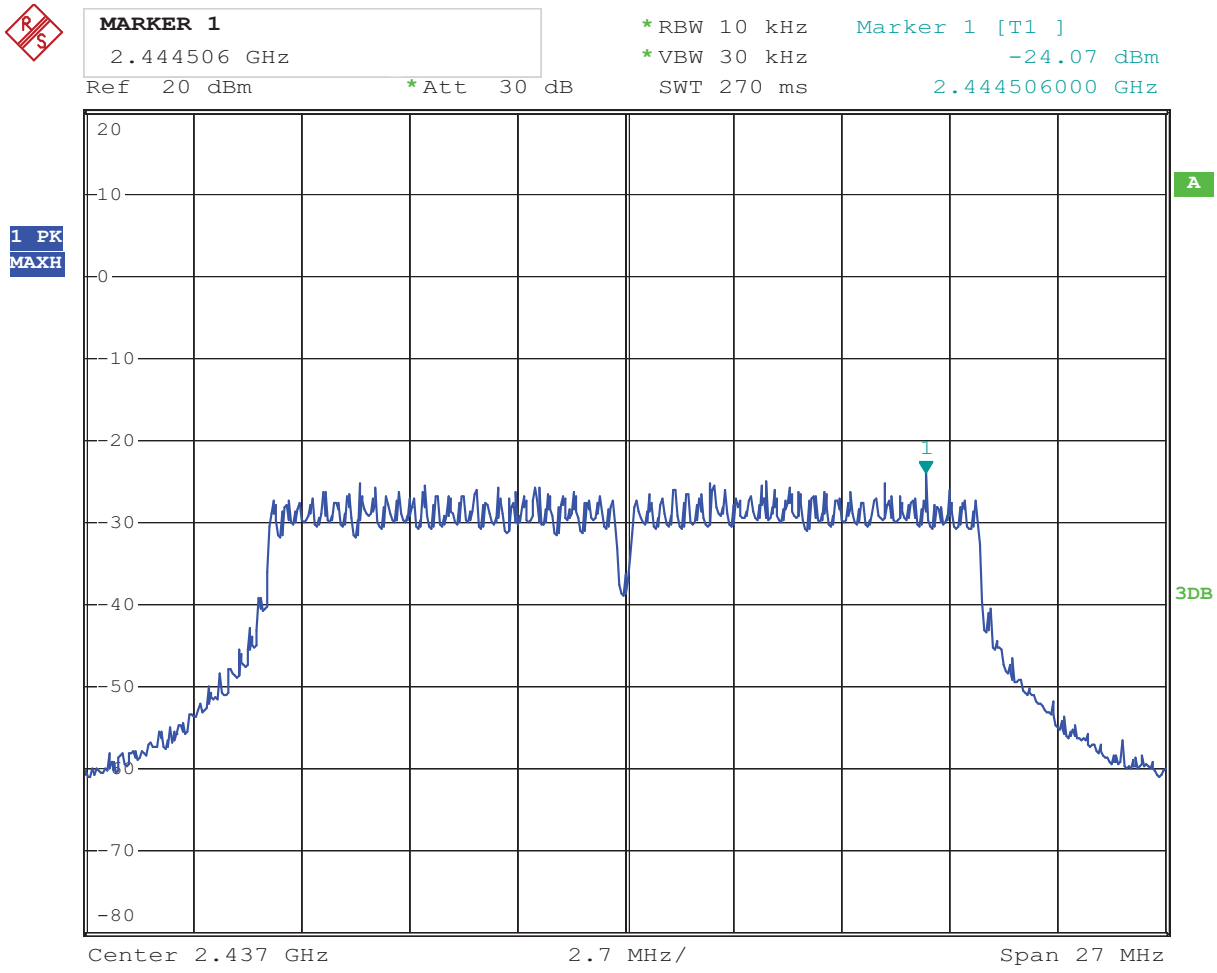
Date: 14.AUG.2013 11:25:35

10. 802.11n at HT20 of CH01 65Mbps

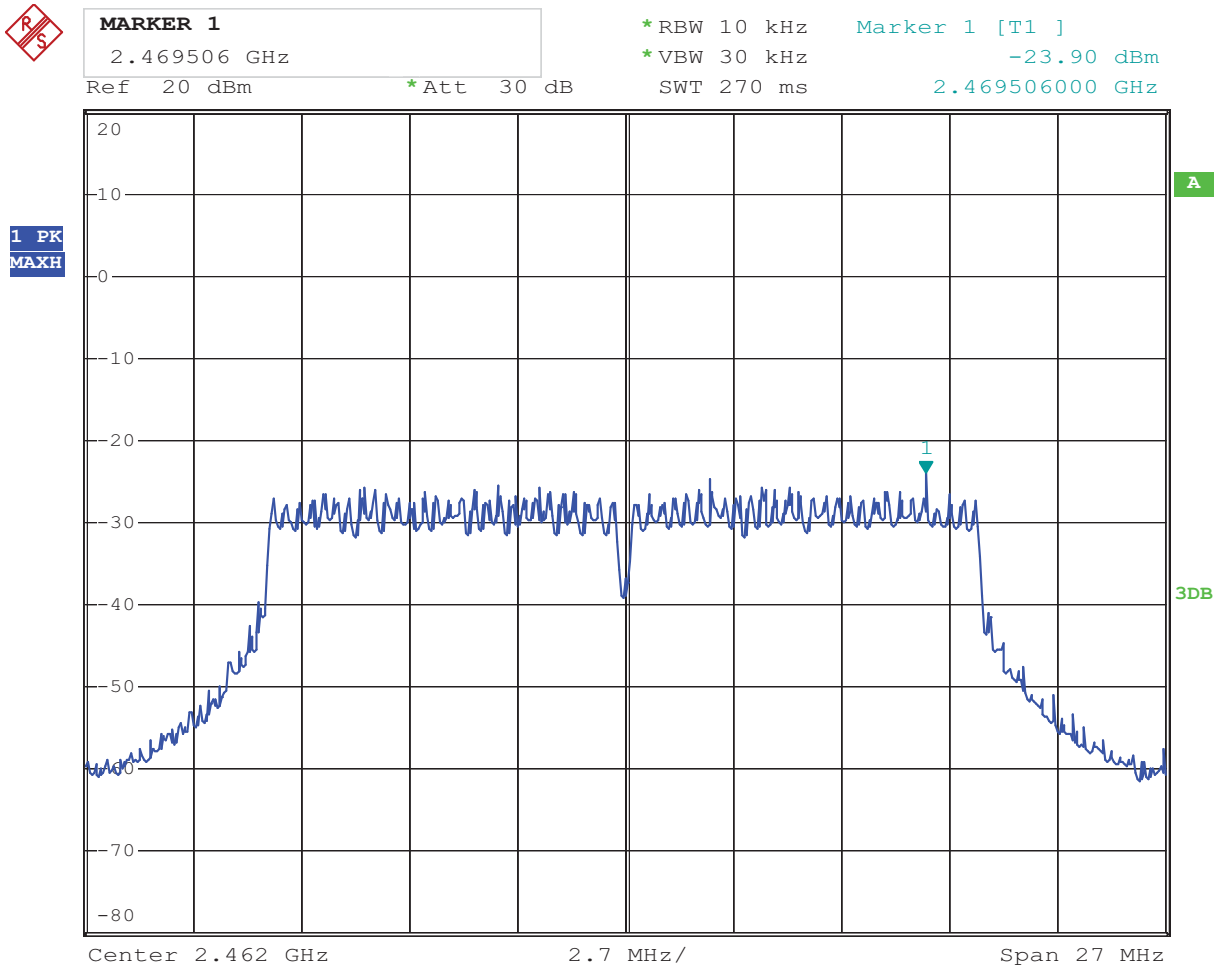


Date: 14.AUG.2013 11:31:33

11. 802.11n at HT20 of CH06 65Mbps

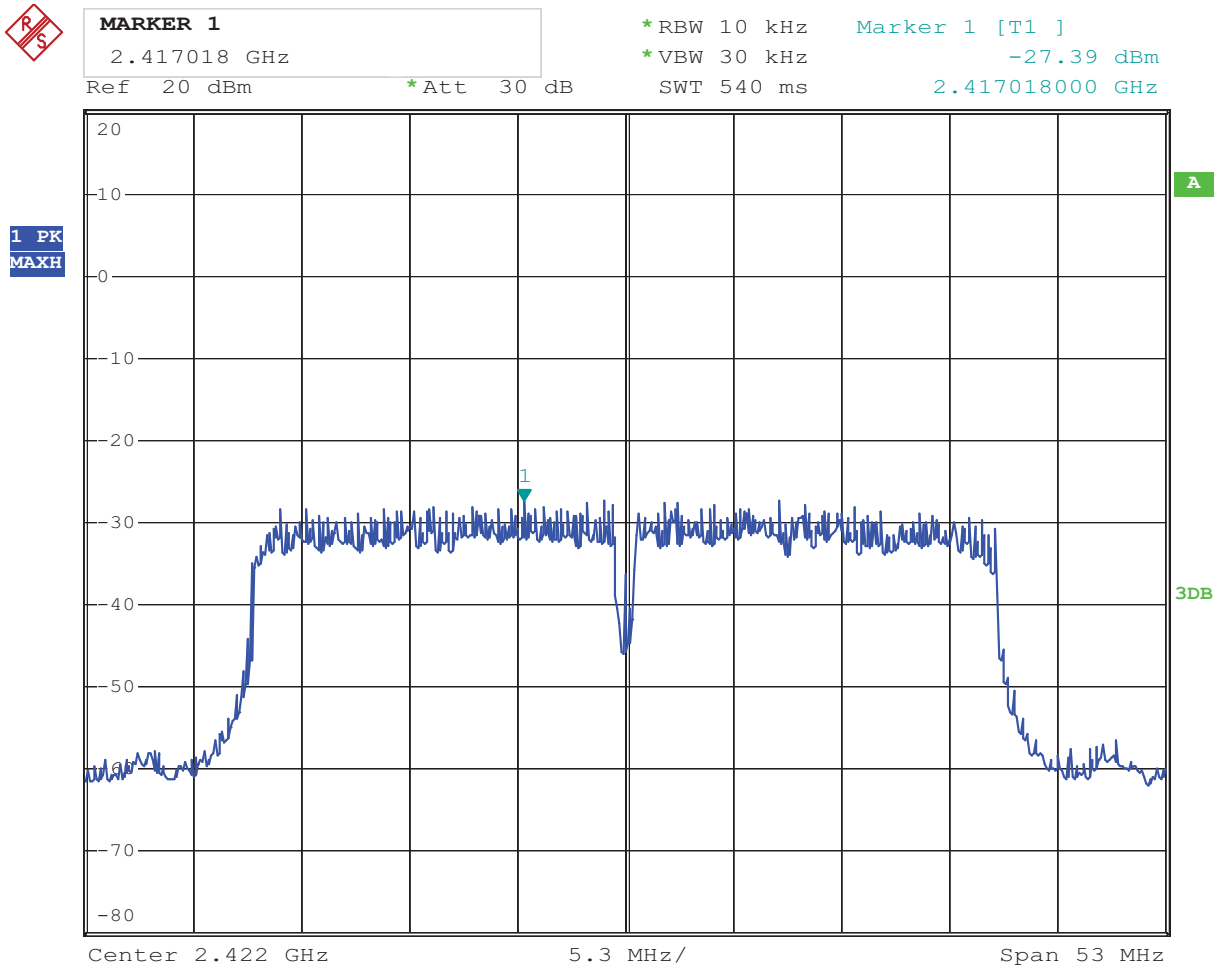


12. 802.11n at HT20 of CH11 65Mbps



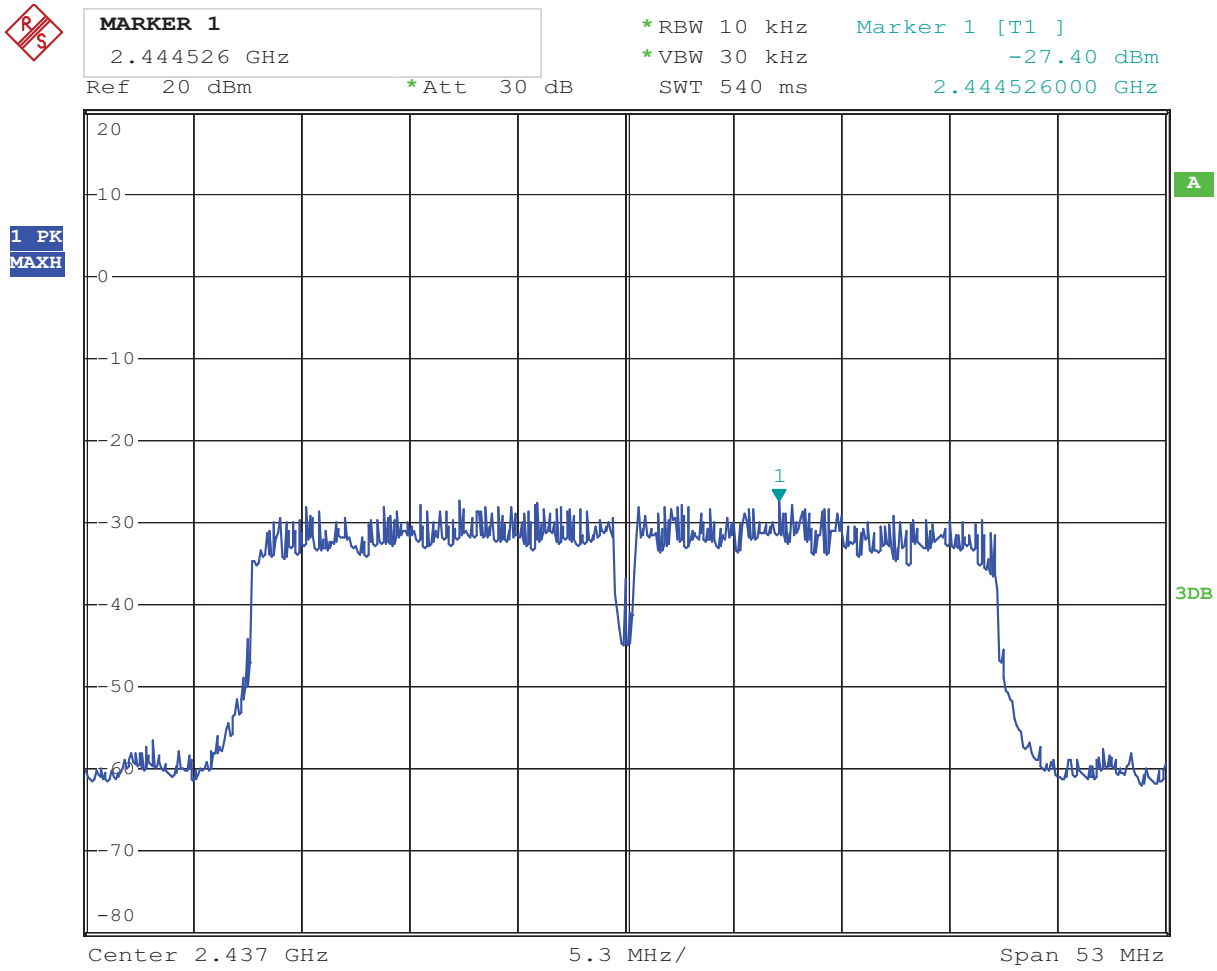
Date: 14.AUG.2013 11:30:19

13. 802.11n at HT40 of CH01 65Mbps

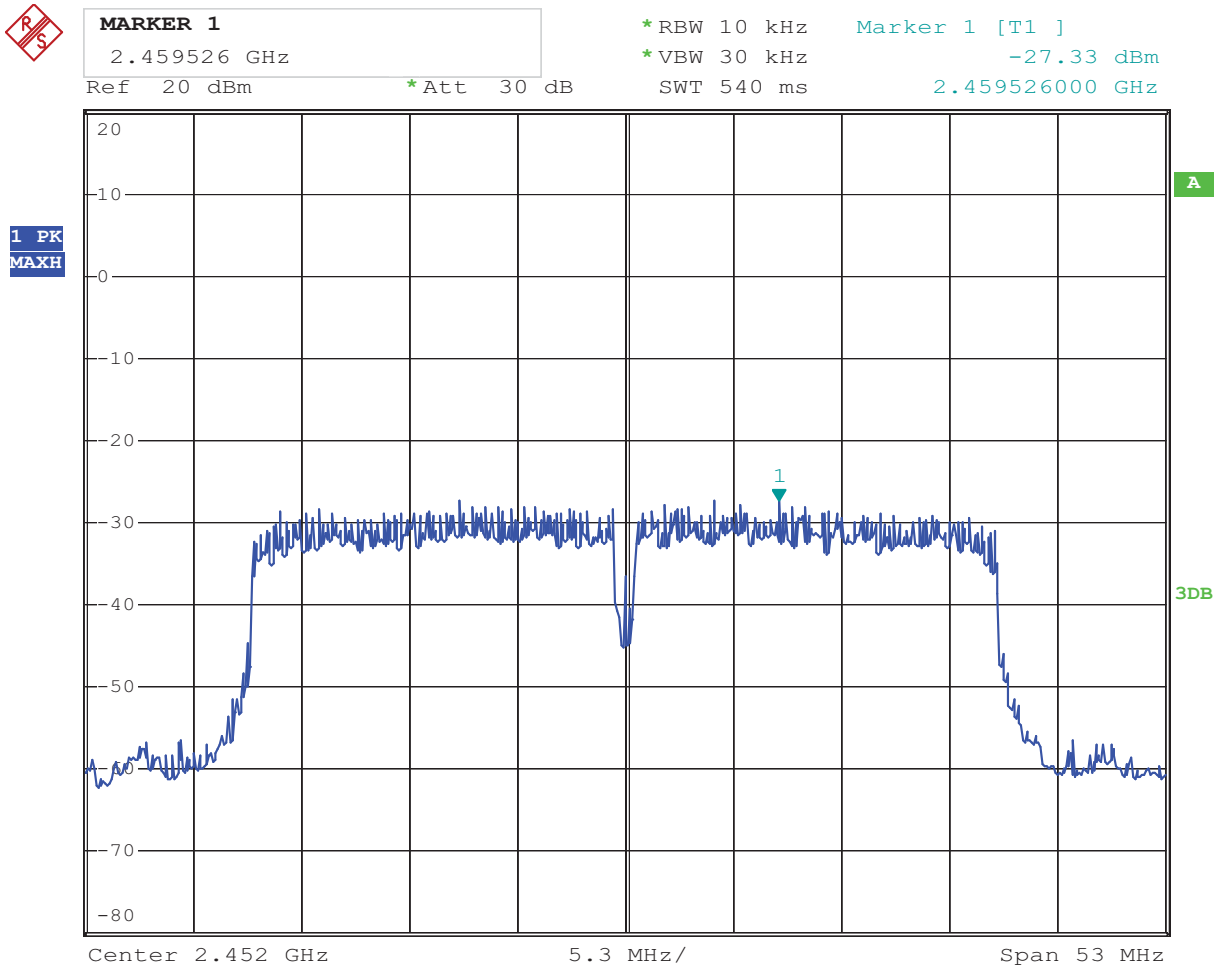


Date: 14.AUG.2013 11:32:52

14. 802.11n at HT40 of CH04 65Mbps



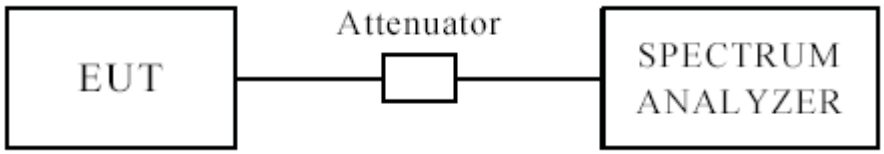
15. 802.11n at HT40 of CH07 65Mbps



Date: 14.AUG.2013 11:34:03

10 Out of Band Measurement

10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

10.2 Limits of Out of Band Emissions Measurement

1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test.(Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=100,VBW=300 kHz. A conducted measurement used

10.4 Test Result

Please see next pages

Note: For band-edge measurement, the frequency from 30MHz-25GHz was tested. The worse case was recorded. And It met the FCC rule.

Remark : Only worse case is reported

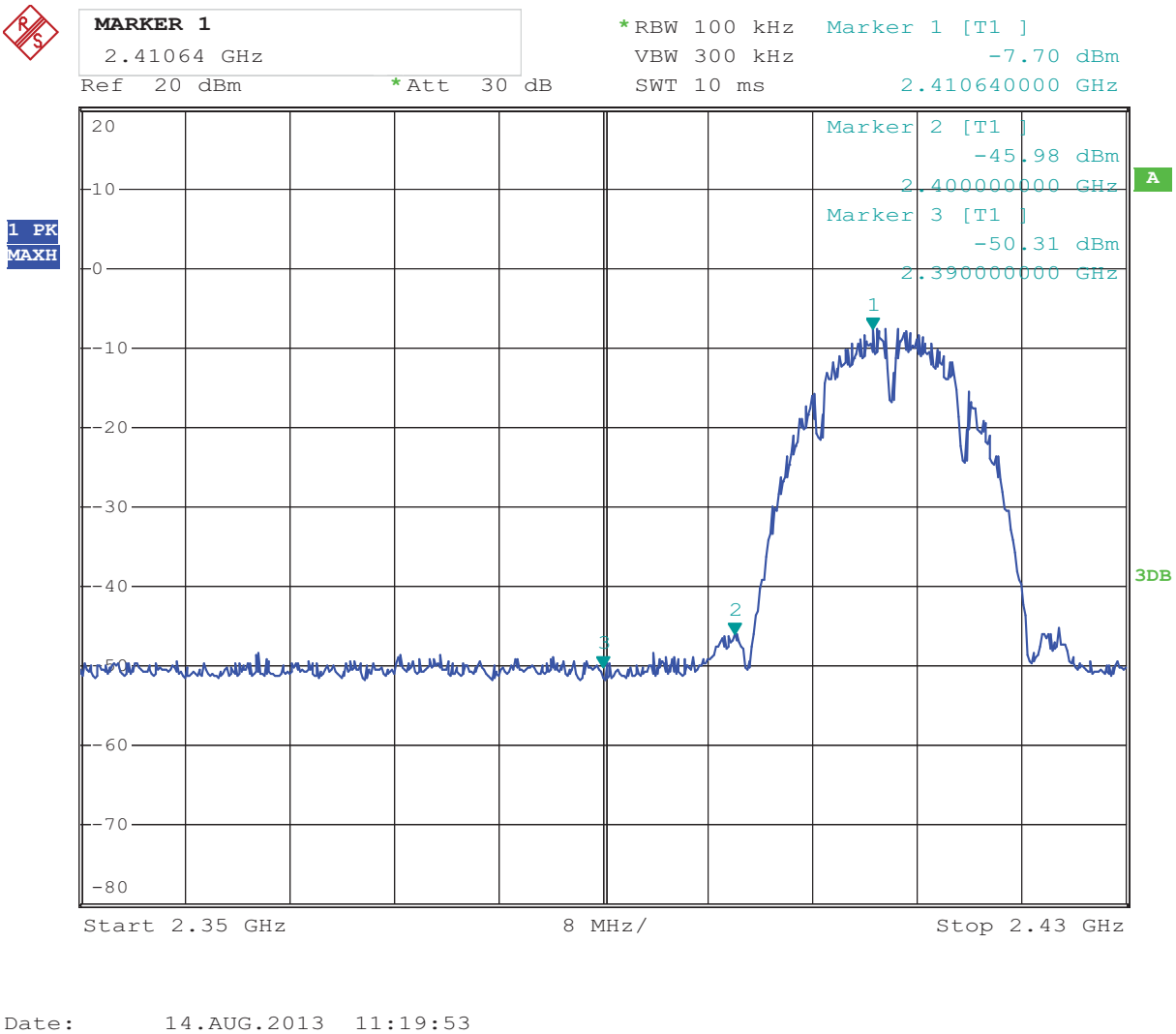
For 802.11b mode

CH01 at 1Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2400MHz	PK (dBμV/m)	44.03	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
2390MHz	PK (dBμV/m)	37.12	Limit	74(dBμV/m)
	AV (dBμV/m)			54(dBμV/m)

Test Figure:

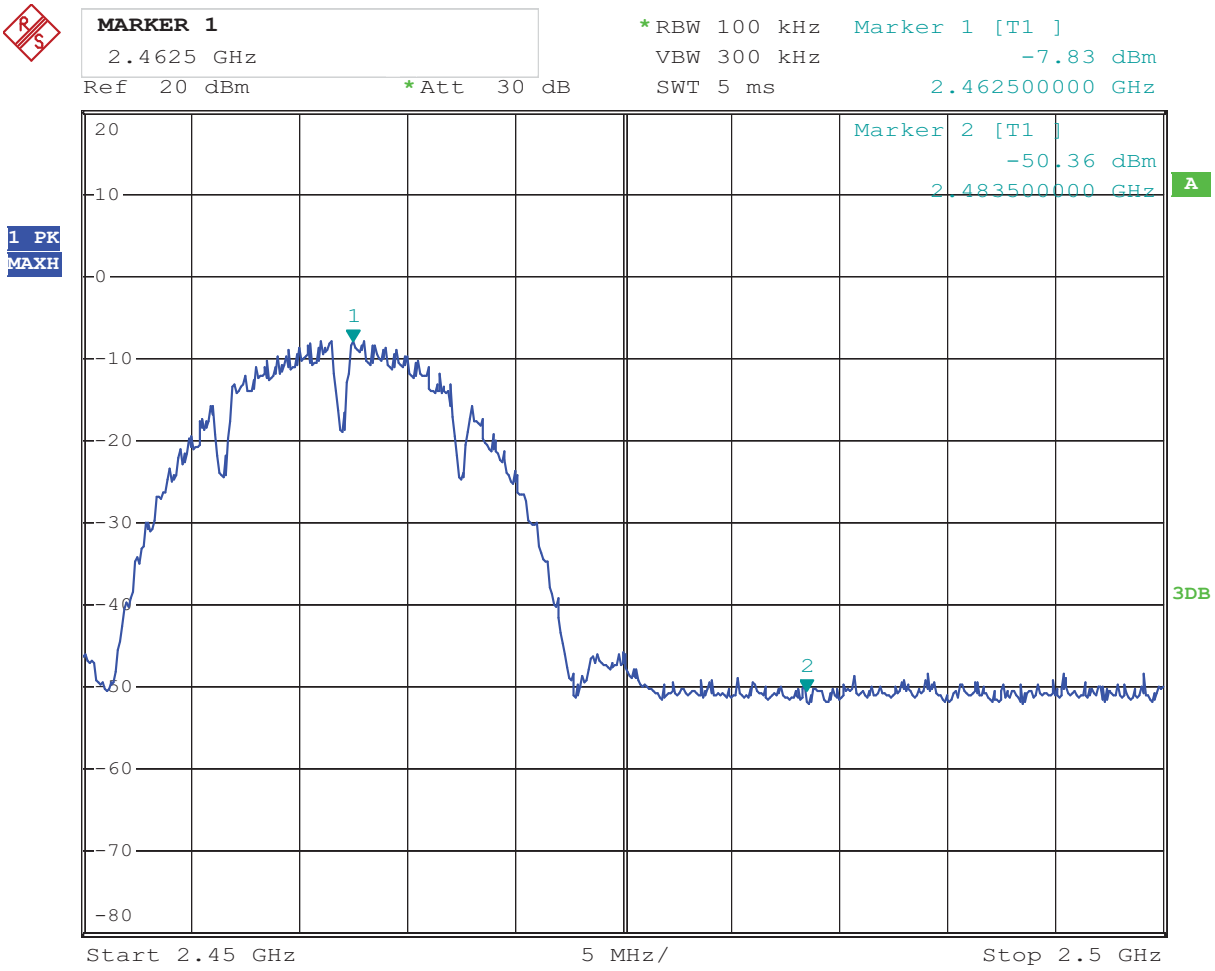


CH11 at 1Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5	PK (dBμV/m)	38.22	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.AUG.2013 11:15:02

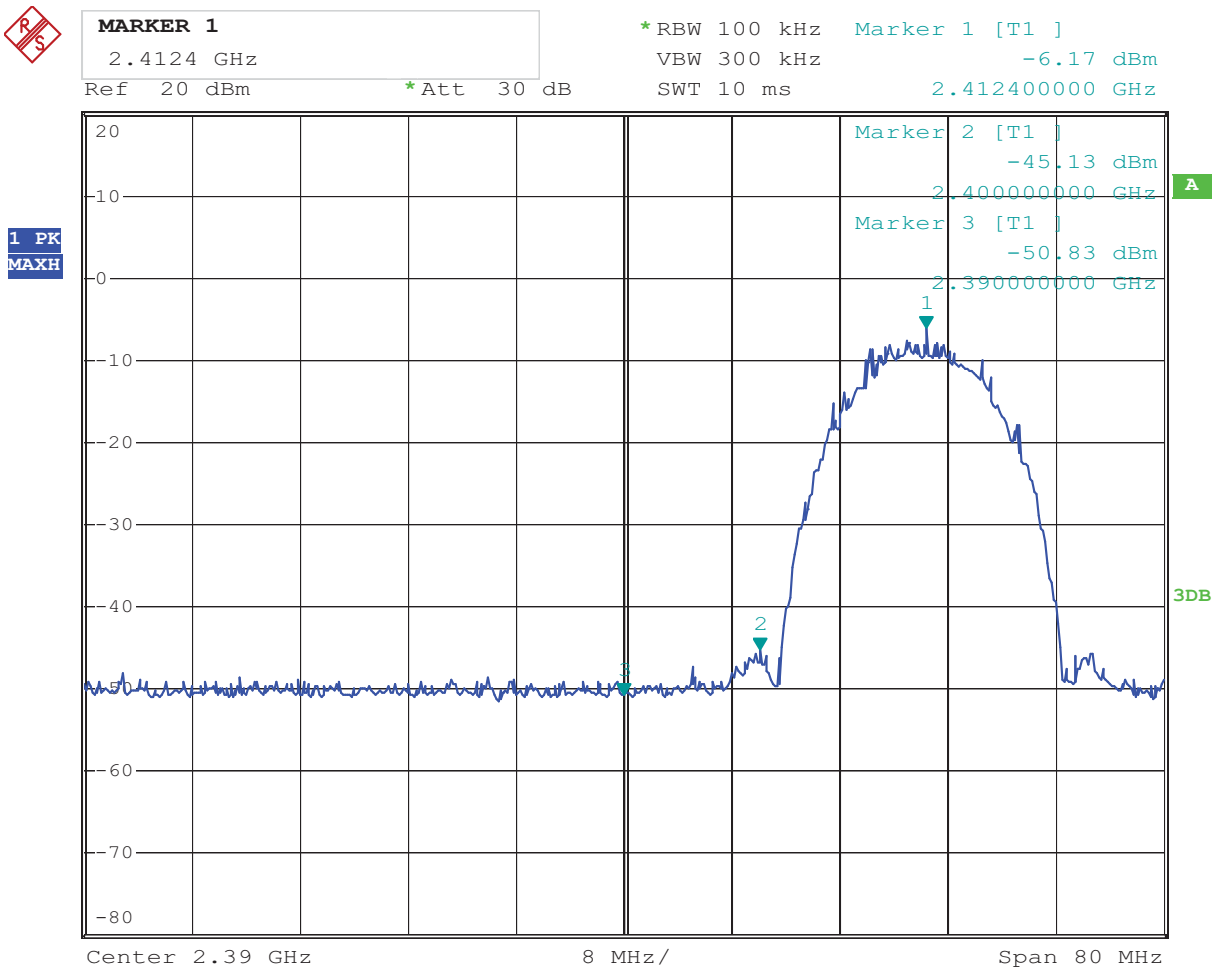
For 802.11b mode

CH01 at 11Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2400MHz	PK (dBμV/m)	43.12	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
2390MHz	PK (dBμV/m)	36.83	Limit	74(dBμV/m)
	AV (dBμV/m)			54(dBμV/m)

Test Figure:



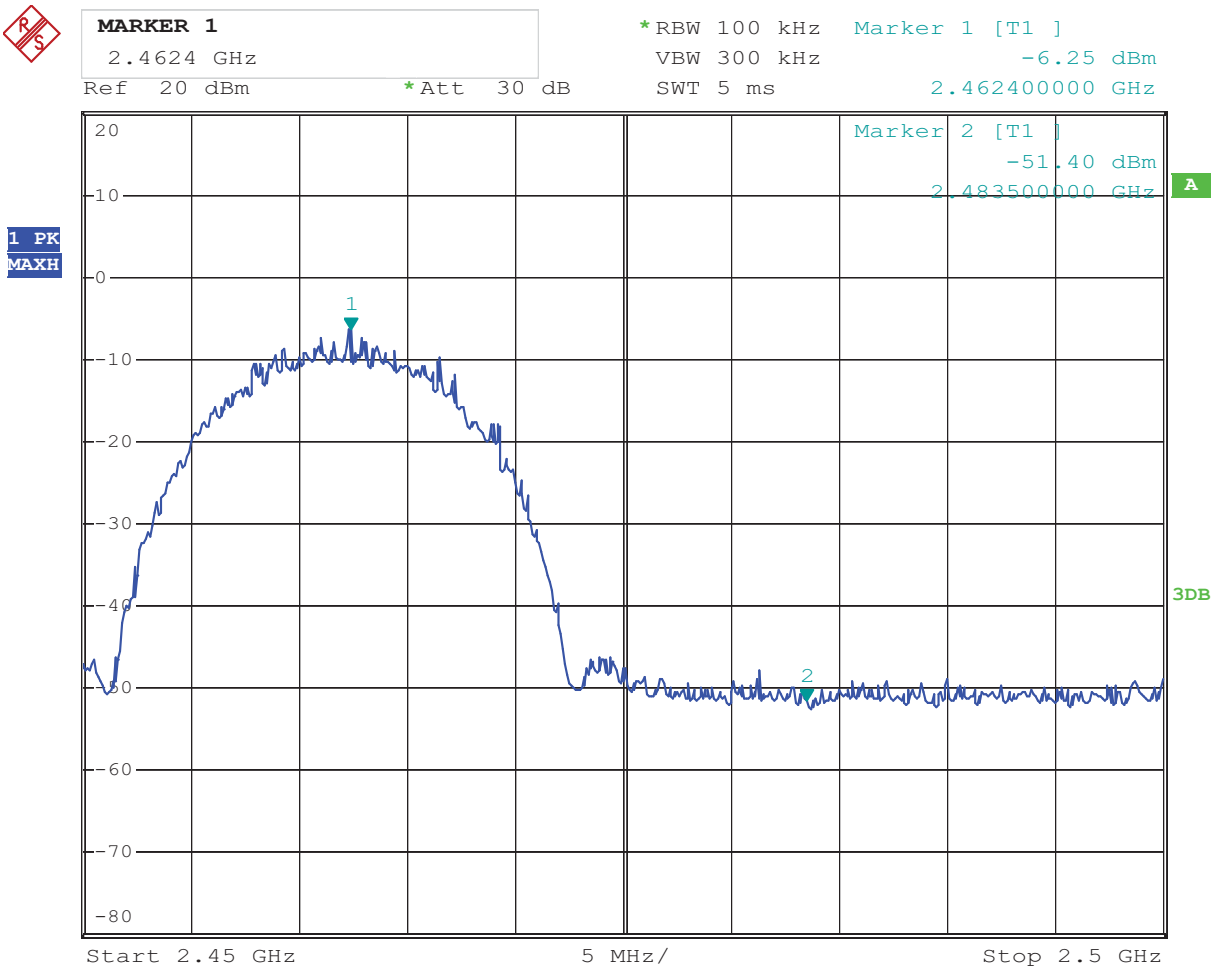
Date: 14.AUG.2013 11:21:22

CH11 at 11Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	D3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5	PK (dBμV/m)	37.19	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.AUG.2013 11:16:11

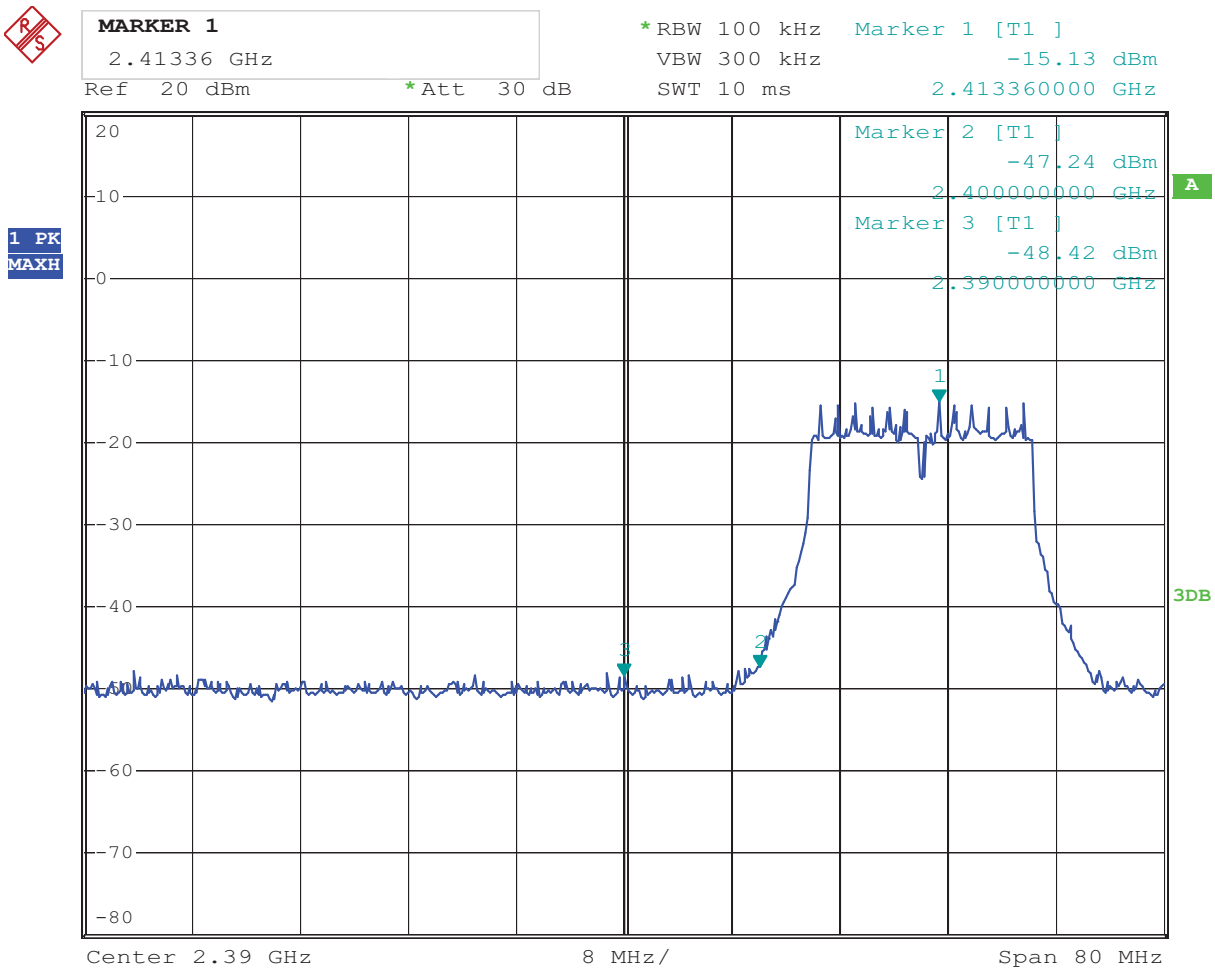
For 802.11g mode

CH01 at 54Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2400MHz	PK (dBμV/m)	45.18	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
2390MHz	PK (dBμV/m)	38.08	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Test Figure:



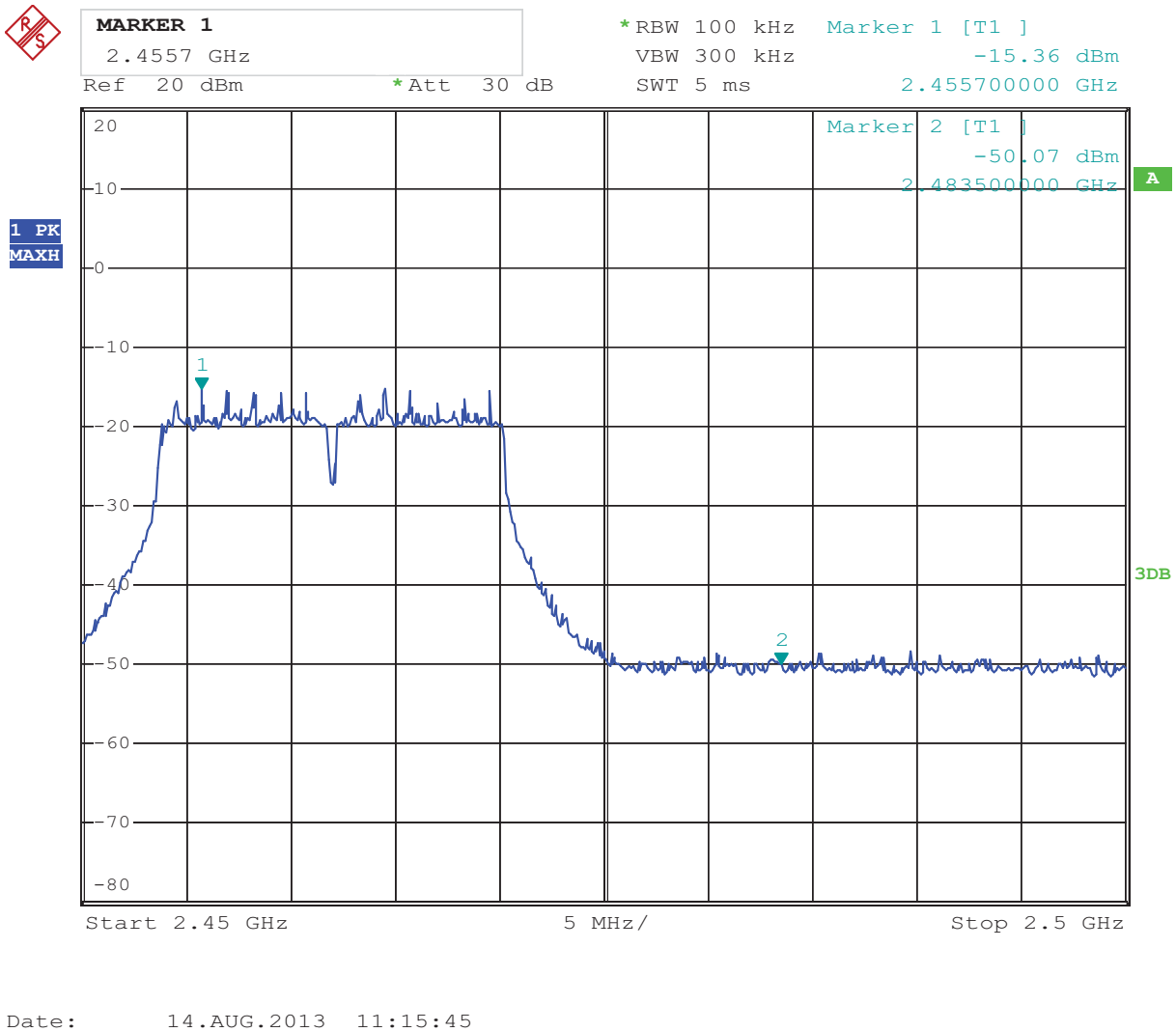
Date: 14.AUG.2013 11:20:41

CH11 at 54Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5	PK (dBμV/m)	38.72	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Test Figure:



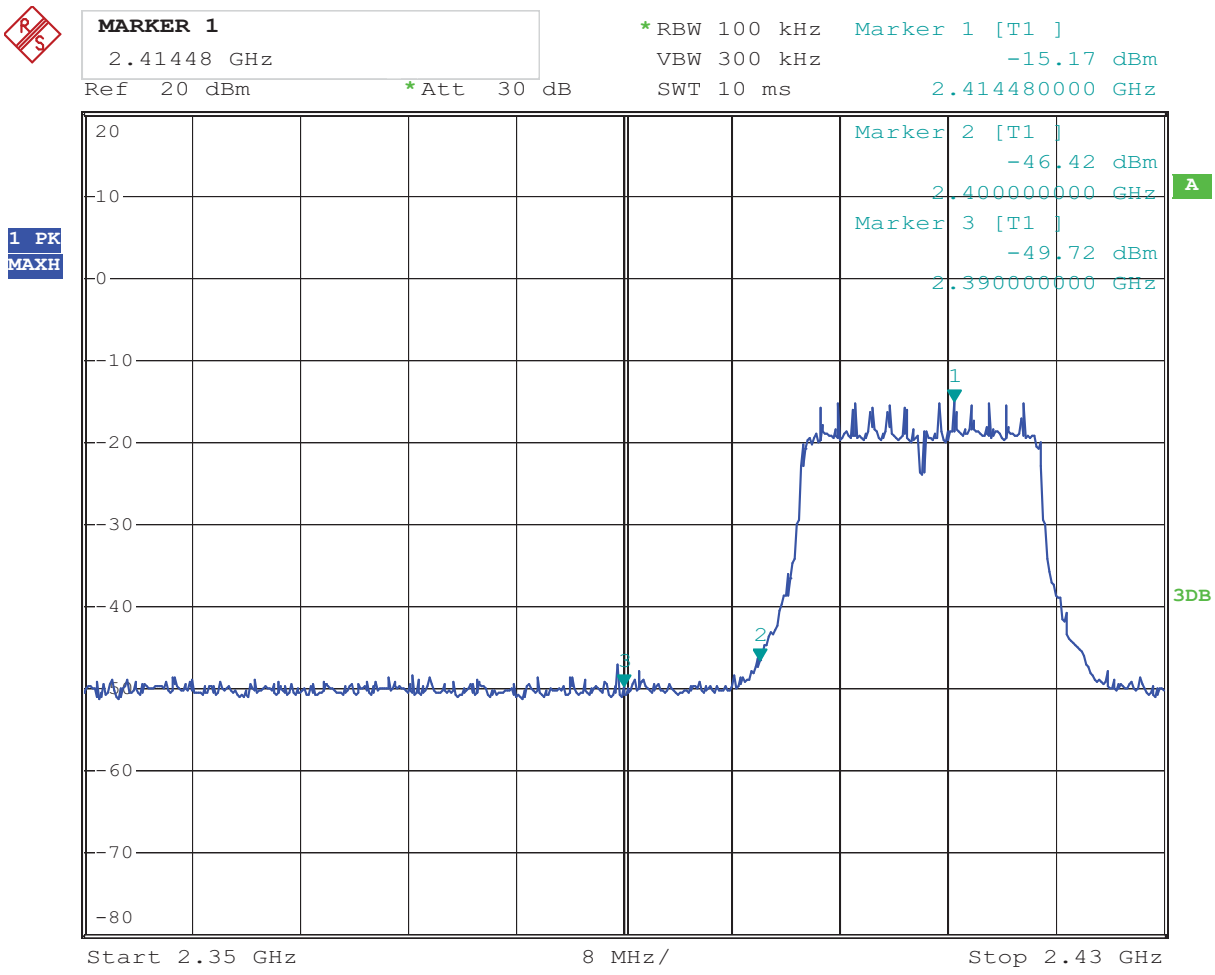
For 802.11n mode

CH01 at HT20 65Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2400MHz	PK (dBμV/m)	43.69	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
2390MHz	PK (dBμV/m)	37.23	Limit	74(dBμV/m)
	AV (dBμV/m)			54(dBμV/m)

Test Figure:



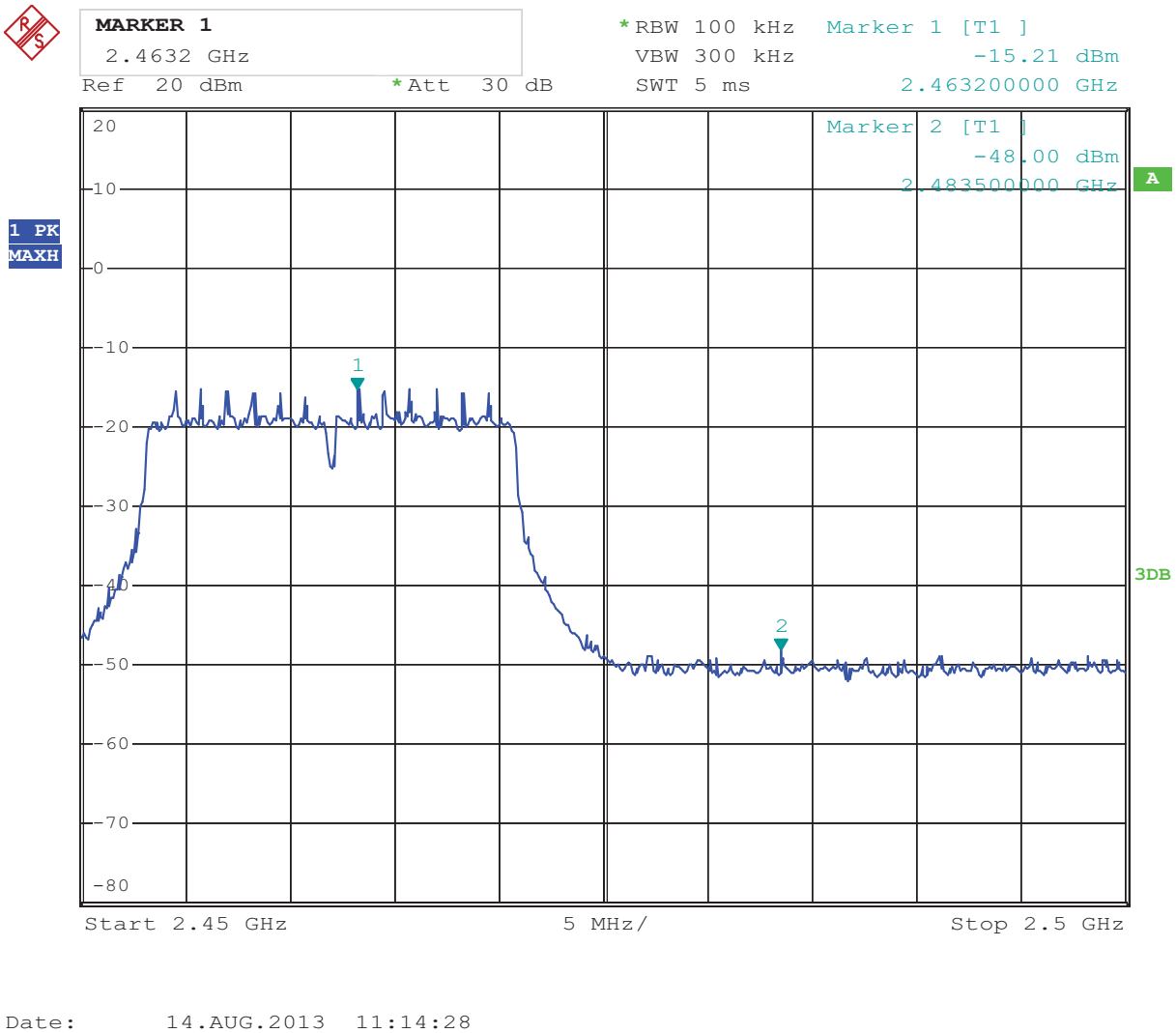
Date: 14.AUG.2013 11:19:18

CH11 at HT20 65Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5	PK (dBμV/m)	39.07	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.AUG.2013 11:14:28

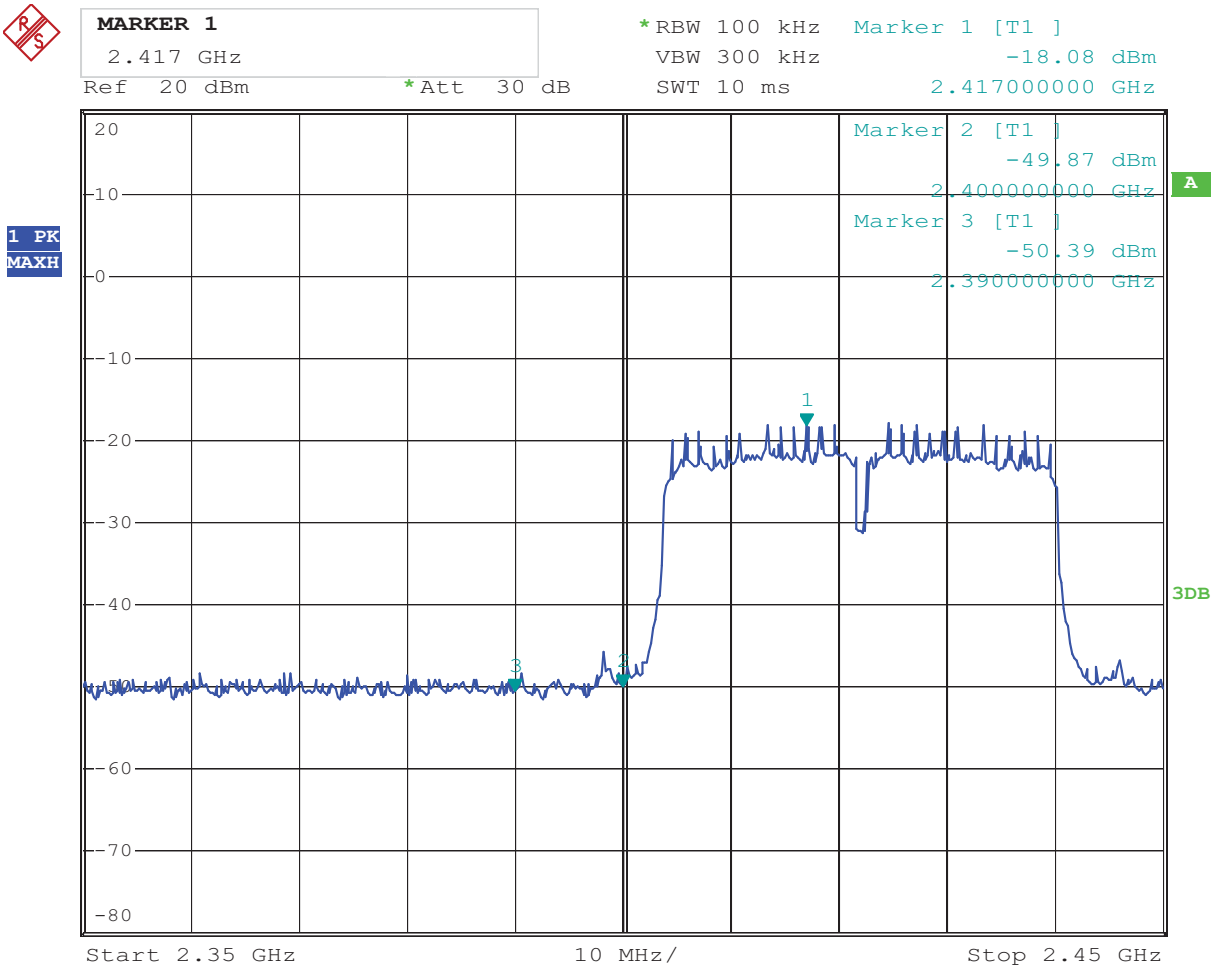
For 802.11n mode

CH01 at HT40 65Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2400MHz	PK (dBμV/m)	43.77	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)
2390MHz	PK (dBμV/m)	37.52	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Test Figure:



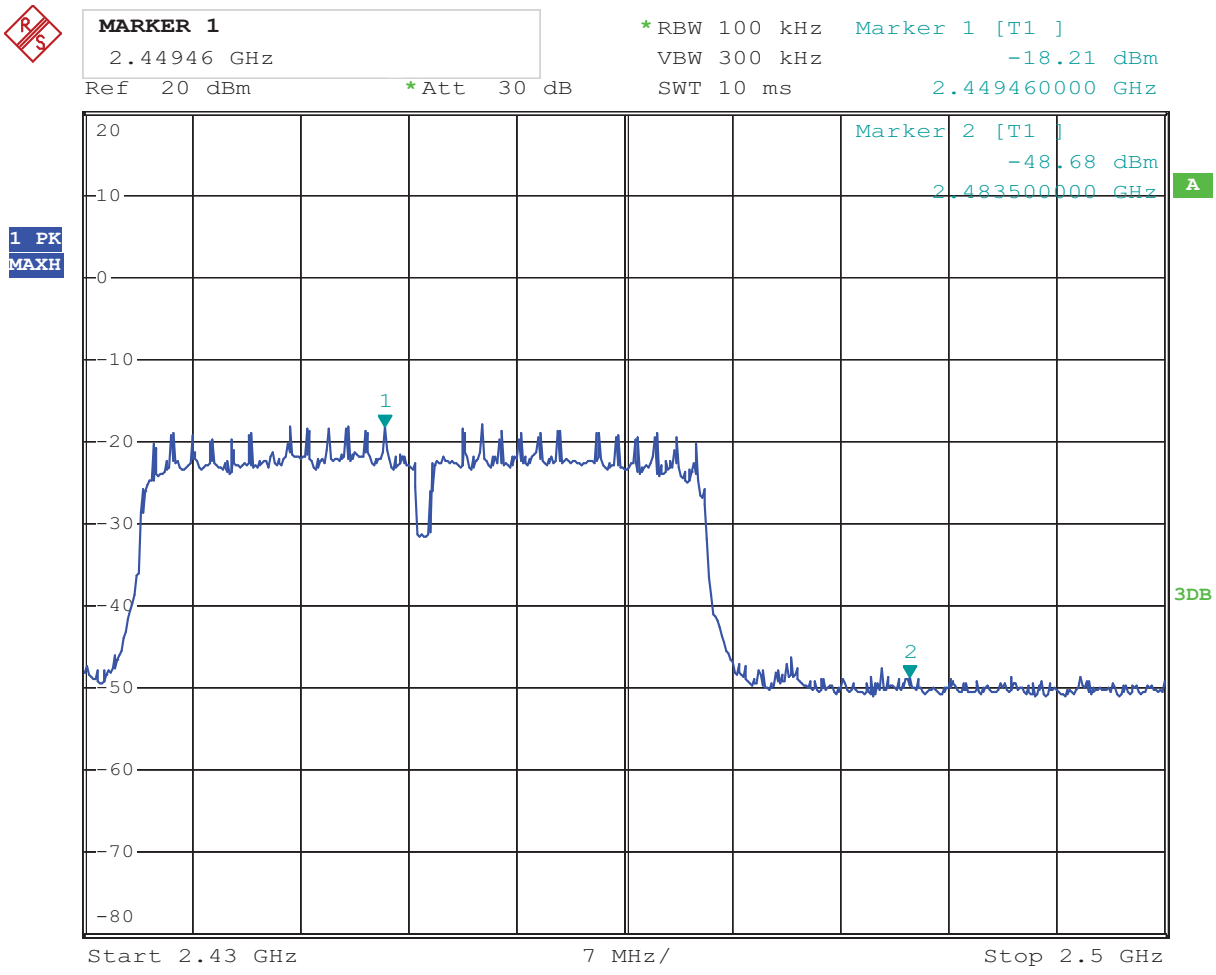
Date: 14.AUG.2013 11:18:16

CH11 at HT40 65Mbps

10.4 Band-edge Measurement

EUT	MID		Model	MID940S-RK68D
Mode	Keeping Transmitting		Input Voltage	DC3.7V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5	PK (dBμV/m)	39.31	Limit	74(dBμV/m)
	AV (dBμV/m)	--		54(dBμV/m)

Test Figure:



Date: 14.AUG.2013 11:17:11

11.0 Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 Antenna Connected construction

Integral antenna used. The maximum Gain of the antennas is 2.0 dBi.

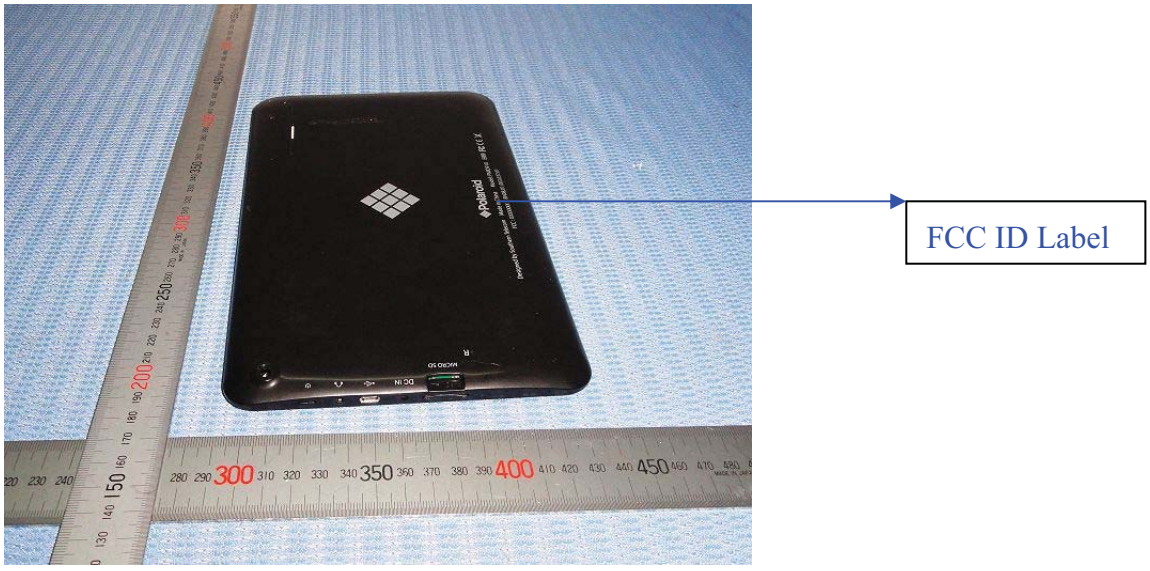
13.0 FCC ID Label

FCC ID: 2AAQZMID940S-RK68D

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

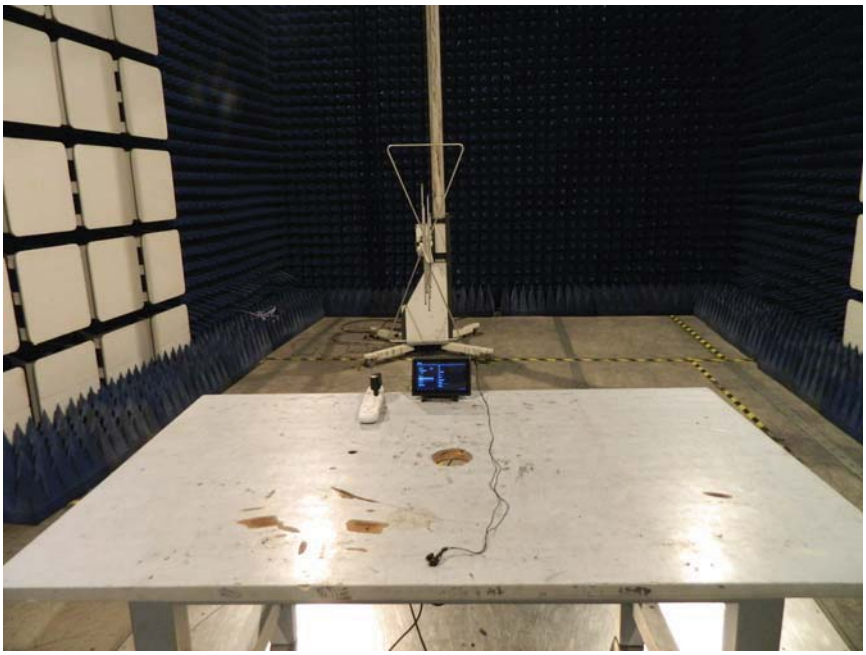
Mark Location:

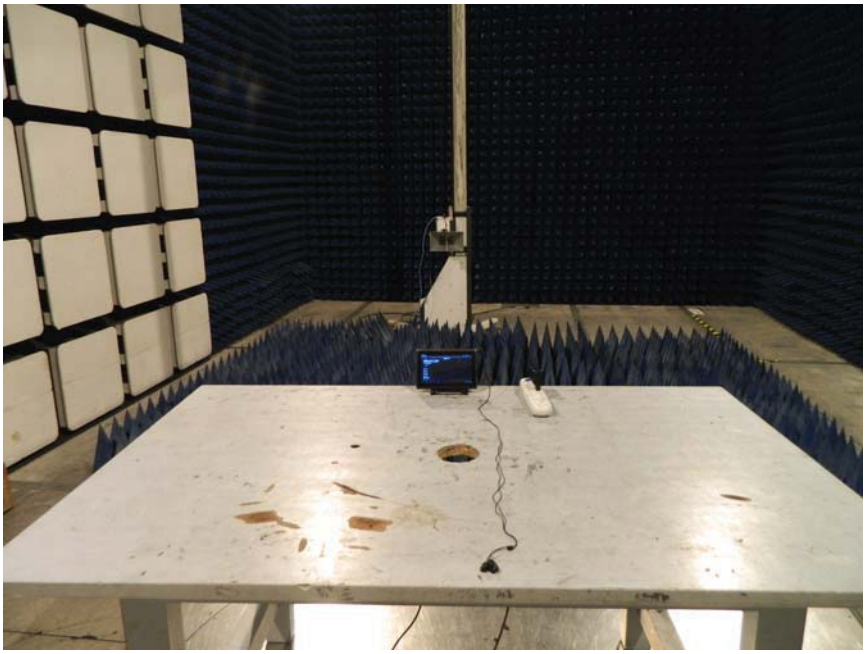


14 PHOTOGRAPHS OF THE TEST CONFIGURATION

Conducted Emissions

Radiated Emissions





PHOTOGRAPHS OF EUT

Photo 1

Photo 2

Photo 3

Photo 4

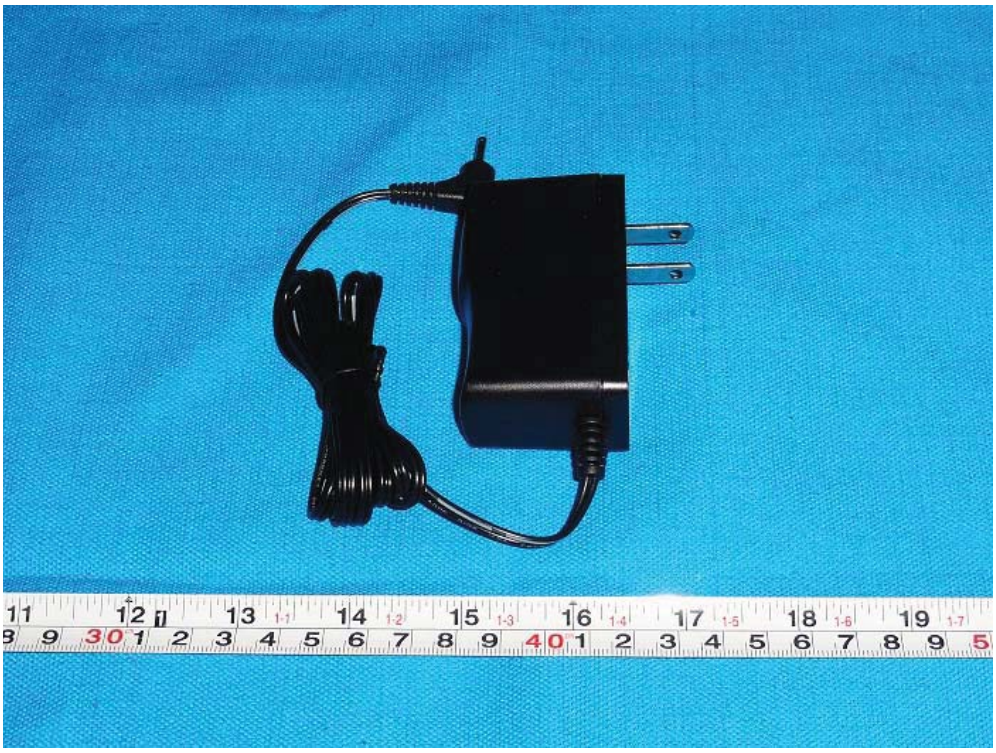


Photo 5

Photo 6

Photo 7

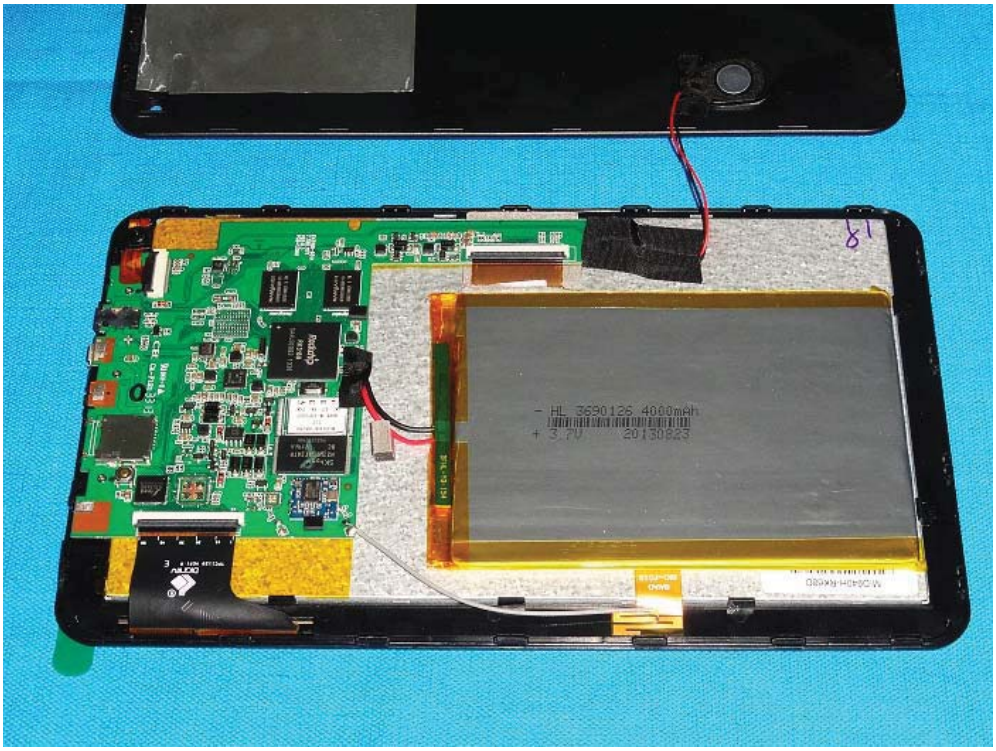


Photo 8

Photo 9

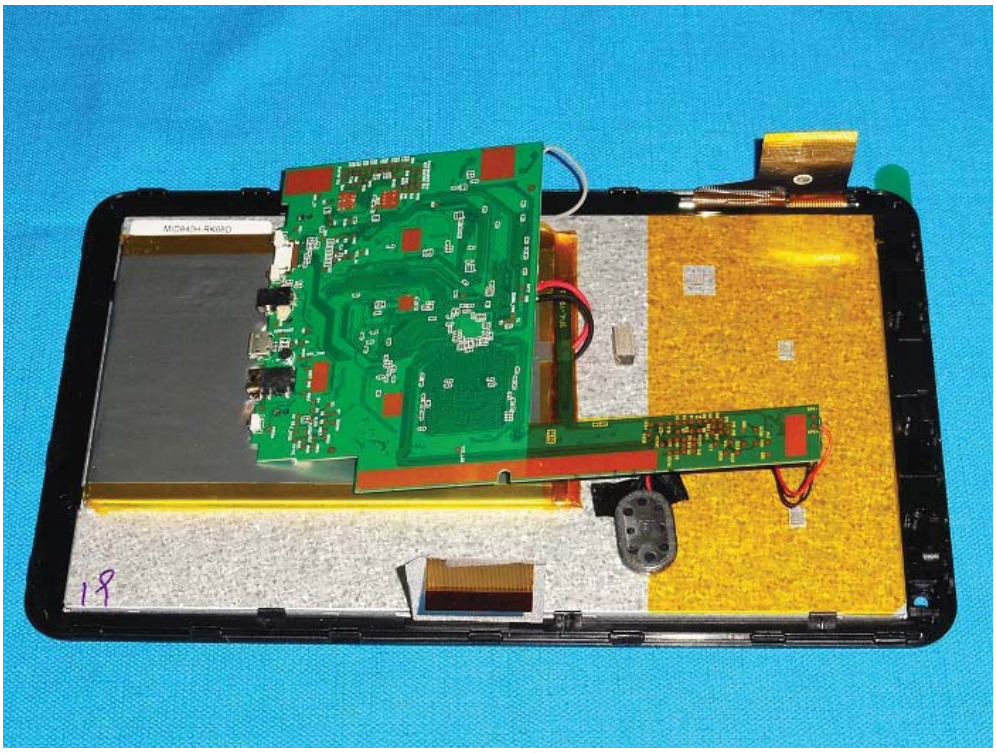


Photo 10

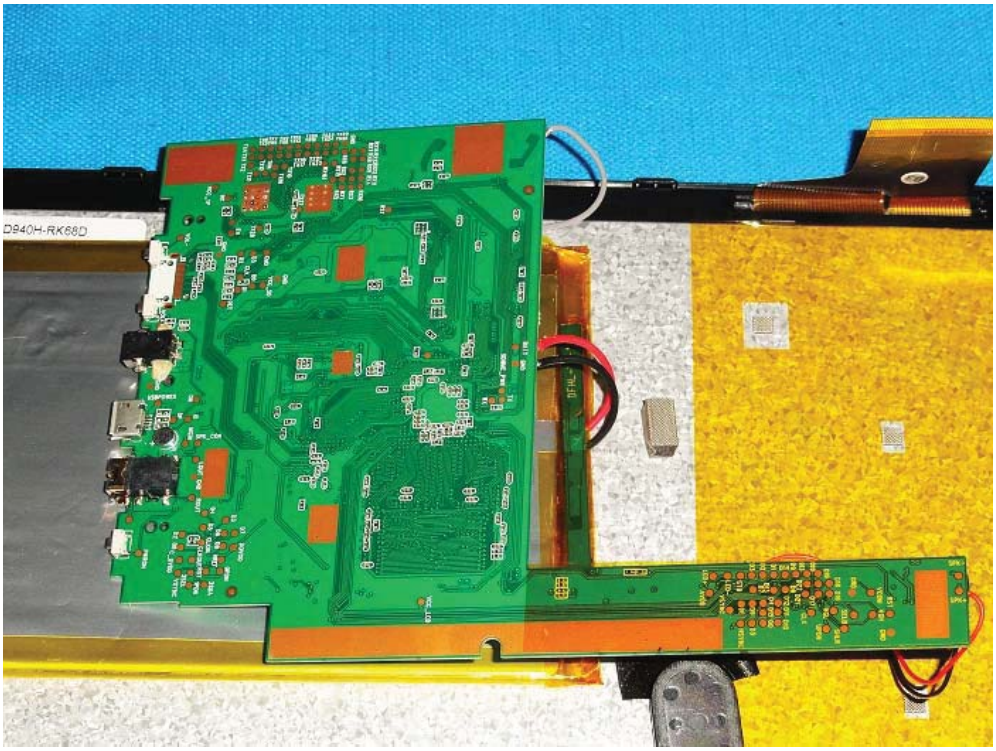


Photo 11

The Report End